

Table . Observations of Hawaiian Monk Seals on Lisianski Island.\*

<u>Dates of Survey</u>	<u>Population Estimate</u>	<u>Breeding Status, Remarks and References</u>
1805 15-18 Oct.	none made	Four large seals killed with handspikes (Lisiansky, 1844).
1891 29 June- 4 July	[evidently few]	Three seals killed (Palmer in Rothschild, 1893-1900:xii, cf. Munro, 1942).
1913 12 Mar.	2	A male and female found asleep on the beach. The latter (USNM 181252) was collected by Willett (Bailey, 1952b:7).
1923 15-19 May	?	Ten specimens (USNM-243847-56) collected (Bailey, 1952b: 11).
1950 24 June	"at least 100" 70	(POFI). Estimate by Brock (in Bailey, 1952b:25)
1951 13 May	195	Counted. Total includes about a half- dozen recently born pups (POFI).
1954 26 Mar.	115	Counted by Frank Richardson (Svihla, 1959: 227).
1955 8 May	c. 100	Counted. Five recently born pups included in total (POFI).
1957 spring	256	Based on aerial counts. Total includes 15 pups (Kenyon and Rice, 1959: 221).
1958 spring	281	Based on aerial counts. Total includes 34 pups (Rice, 1960:377).
1961 9-10 Mar.	172	Counted on 9 March. Total includes 19 pups and 36 yearlings <sup>**</sup> (Woodside and Kramer (ms.))



Table . Population Counts of Hawaiian Monk Seals at North Island

<u>Date of Survey</u>	<u>No. of seals counted</u>	<u>ADULTS</u>		<u>SUBADULTS</u>		<u>PUPS</u>		<u>Personnel making count</u>	<u>Source</u>
		<u>No.</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>		
Mar. 6, 1963									POBSP
June 1963									POBSP
Aug. 1964	22&	---	---	---	---	-2-	---		POBSP
Mar. 17, 1965	52	---	---	---	---				POBSP
Aug. 1967	42	15		6		0			POBSP
* Mar 31, 1969	27	16		5		4		BSFW	Kridler, 1969 ms.
May 26, 1969	17	9		2		6		BSFW	Kridler 1969 ms. b.

TABLE Population counts of Hawaiian Monk Seals on the islands of Pearl and Hermes Reef

Date of Survey	No. of seals counted	ADULTS		SUB-ADULTS		PUPS		Personnel making count	Source
		No.	%	No.	%	No.	%		
SOUTHEAST ISLAND									
Mar. 12 1961	12							D.H. Woodside, R.J. Kramer, (Haw. Div. of Fish & Game)	Woodside & Kramer, 1961
Mar. 1963									POBSP
June 1963									POBSP
Mar. 13 1964	22	11	50.0	11	50.0	0			
Aug. 1964	15					0			POBSP
Sept. 16 1964	33	16		16					
Mar. 15 1965	31					0			POBSP
Mar. (21) 1965	45	24		18		1			
Mar. 1967									
May 28 1967	21	13		7		1		R.L. DeLong (POBSP)	POBSP
Aug. 1967	15	12	80.0	3	20.0	0			POBSP
NORTH ISLAND									
Mar. 6 1963									POBSP
June 1963									POBSP
Aug. 1964	22					2			POBSP
Mar. 17 1965	52								POBSP
Aug. 1967	42	15		6		0			POBSP



Table . Sex-ratios observed in different age-groups of Hawaiian Monk Seals at Pearl and Hermes Reef

Da Date of Survey	ADULTS					SUBADULTS					PUPS					Islands visited on which seals sexed and source of information
	No. Sexed	# of ♂♂	# of ♀♀	# of ♂♀	% of ♀♀	No sexed	# of ♂♂	# of ♂♂	# of ♀♀	% of ♀♀	No sexed	# of ♂♂	% of ♂♂	# of ♀♀	% of ♀♀	
May 1969	38	3		34		0	—	—	—	—	16	8		8		All islands visited on 26 May (RSEW)



TABLE \_\_\_\_ Population counts of Hawaiian Monk Seals on the islands  
of Pearl and Hermes Reef

<u>Date of Survey</u>	<u>No. of seals counted</u>	<u>ADULTS</u>		<u>SUB-ADULTS</u>		<u>PUPS</u>		<u>Personnel making count (and) Source</u>
		<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	
<u>SOUTHEAST ISLAND</u>								
Mar. 12 1961	12	—	—	—	—	—	—	D.H. Woodside, R.J. Kramer (Haw. Div. of Fish & Game) (Woodside & Kramer 1961)
Mar. 1963								
June 1963								
Mar. 13 1964	22	11	50.0	11	50.0	0	—	
Aug. 1964	15	—	—	—	—	0	—	

Table . Population Counts of Hawaiian Monk Seals at Southeast Island, ~~XXXXXXH~~

<u>Date of Survey</u>	<u>No. of Seals Counted</u>	<u>ADULTS</u>		<u>SUBADULTS</u>		<u>PUPS</u>		<u>Personnel making count</u>	<u>Source of Data</u>
		<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>		
Mar. 12, 1961	12	---	---	---	---	---	---	D.H.Woodside, R.J.Kramer (HDF&G)	Woodside and Kramer, 1961
Mar. 1963									POBSP
June 1963									POBSP
Mar. 13, 1964	22	11	50.0	11	50.0	0	0.0		
Aug. 1964	15	---	---	--	---	---	---		POBSP
Sept. 16, 1964	33	16		16		---			
Mar. 15, 1965	31	---	---	---	---	0			POBSP
Mar. (21) 1965	45	24		18		1			
Mar. 1967									
May 28, 1967	21	13		7		1		R.L.Delong (POBSP)	POBSP
Aug. 1967	15	12	80.0	3	20.0	0	0.0		POBSP
* March 31 - April 2 1969	37	17		14		0		BSFW	Kridler 1969 ms.
May 26 1969	16	13		2		1		E. Kridler (BSFW) D. Allied	Kridler 1969 ms, b

1.

2. Date of count 31 March?



*1 sent 2 copies*

MONK SEAL AND GREEN TURTLE COUNTS  
ON CERTAIN ISLANDS OF PEARL AND HERMES REEF,  
March 16-17, 1967

*PW in  
P x 14  
Island for*

Van T. Harris

North Island 3-16-67 (upon arrival)

Turtles: 9 (none with tags)

Seals: (estimated age) yearlings: 19  
adults: 11

Bands: (uncolored) 559 (yr.)  
562 (adults)

South North Island 3-17-67 (early a.m. from helicopter flying far off west side of island; count may be incomplete)

Seals: 4

Southeast Island 3-17-67 (a.m. Not entirely before disturbance)

Seals: (estimated age): yearlings, 6  
adults, 8  
(no band) dead yearling 1

Bands (uncolored):  
#566 ad ?  
567 ad  
592 ad  
584 ad ?

Turtles: (arrived after we did and after beach count of seals). 8 (1 was tagged, but escaped before reading).

Islands west of Southeast except Kittery and Seal (which we did not pass over)  
(early afternoon 3-17-67).

Seals: 19 (counted from Helicopter). Robbins has aerial photos from which we can later make count on each island.

Ribbon copy: Eugene Kridler  
cc: Hawaii Fish and Game  
cc: Pacific Project, Smithsonian ✓  
cc: Portland Regional Office  
cc: Dr. Van T. Harris



Seal Tags Recorded Aug-Sept 1967

PHR:

SE (28 Aug) - A 96; 95; A 179; 567; 592  
North (29 Aug) 559  
Seal (29 Aug) A 172  
Grass (29 Aug) A 173; A 151;

Lisianski:

2 Sept. : 77; A 66;  
4 Sept. : ~~A 31; A 59; A 119~~ A-72; A-74; 533

Laysan:

6 Sept. : A 31; A 59; A 119

from given books 11-25-67 (car)



PSP #31  
FIS 3  
Population Dynamics and Inter-atoll Movement  
of the Hawaiian Monk Seal

William O. Wirtz, II

Comment: DeLong

ABSTRACT

Monk seals were tagged and censused in the Leeward Hawaiians between February 1963 and July 1965. Most of the work was done at Kure Atoll. A total of 375 seals was tagged, 56 of them known age pups, and 1997 subsequent sightings were recorded for the subadult and adult individuals. Adult mortality is apparently low. Numbers of seals on the beach fluctuate irregularly. Only 10% of the total tagged seals were observed per census. Approximately 47% of the seals observed in a given month were not seen in the previous month. Limited inter-atoll movements of up to 300 miles are documented. The size of the population utilizing a given island at a given time may be from two to ten times the number counted on the beach.

Tagging & Return

INTRODUCTION

The Hawaiian monk seal, Monachus schauinslandi, is restricted in its distribution to six atolls in the Leeward Archipelago of the Hawaiian Islands. The total population is presently estimated at 1350 individuals (Rice, 1960). Because of the inaccessibility of its natural habitat relatively little has been published concerning the biology and ecology of this species.

Name the atolls??

The Pacific Ocean Biological Survey Program of the Smithsonian Institution began tagging monk seals in early 1963 as one aspect of an ecological survey of the Leewards. Between September 1963 and August



1965 the Survey maintained an ecological research station on Green Island, Kure Atoll (28° 2' N Lat, 178° 1' W Long). During this period information was collected concerning population dynamics, movements, and behavior of the monk seal.

#### METHODS

Monk seals were tagged in the web of the left hind flipper with a yellow nylon, rivet-style, cattle ear tag supplied by the National Agricultural Supply Company. The tags had black numerals imprinted on the male portion and return information on the female portion. Seals were <sup>immobilized</sup> (physically subdued) by two or three men using rope nooses or a large tarpaulin while the tag was fastened <sup>Through the web of the flipper.</sup> with special pliers. Efforts were made to tag all the animals which used Kure Atoll in late 1963 and early 1964. On other islands seals were tagged <sup>as</sup> whenever time permitted. Most of this tagging was done in 1963.

Age, sex, date, and exact locality were recorded for each newly tagged animal. Any additional information, such as injuries, foods, presence of young, association with other individuals, or behavior, was also recorded. The dates and localities of subsequent sightings, ~~plus any relevant data~~, were <sup>recorded for</sup> ~~added to the record kept~~ on each seal.

Seals were counted on the beach <sup>at</sup> ~~each island~~ each time the island <sup>was</sup> ~~visited~~ <sup>The Counts were taken</sup> normally on the first day of the visit before anyone had passed along the beach, so that the counts obtained would be natural for that time of day, season, and weather conditions. Time limitations did <sup>(Natal)</sup> not permit sexing of individuals, <sup>210\* 420</sup> ~~but~~ pups in black pelage, subadults of mature pelage but weighing between 45 and 90 kg, and adults were differentiated. AWK:



At Kure seals were counted on the beaches of Green Island at intervals of one to two weeks, and occasionally more frequently, between October 1963 and July 1965. The 3.5 mile beach was marked at 100 yard intervals so that individuals could be quickly located with reference to these markers. In addition to these regular censuses Survey and Coast Guard personnel frequently walked portions of the beach, gaining additional information from tagged seals.

### RESULTS

- Populations - The distribution by age, sex, and locality of the
- ⊗ 375 seals tagged by the Survey is presented in Table 1. The majority of these animals, 149 adults or subadults (hereafter referred to as the adult group), and 56 pups, were tagged at Kure Atoll, <sup>New Sentinel</sup> and 94 ~~adult group~~ ⊗ seals were tagged at Pearl and Hermes Reef (27° 4' N Lat, 175° 4' W Long).  
All but three of the pups tagged at Kure are known age animals.

Nine of the adult group tagged at Kure were seen only in the month they were tagged, but four of these animals were not tagged until March 1965. <sup>For the remaining 14 animals</sup> There are 1929 subsequent observations available on the remaining 140 animals, including two <sup>later atoll observations</sup> subsequently found on other atolls in the Leewards. <sup>Subsequent obs. of individuals ranged from 1 to 62.</sup> A maximum of 62 observations is available for one individual, but some were seen only once subsequent to tagging.

<sup>From</sup> Between October 1963 and July 1965 Survey personnel made 70 counts of the seals present on the entire beach at Kure (Table 2). These counts normally took about two hours, and every effort was made to avoid frightening animals off the beach so that they would not be counted a second time. In addition there were 13 counts of the seals on the sandspits

*sentences slow and in direct - needs to be shortened*

*necessary?*



Table 1: Distribution by age, sex, and locality of tagged monk seals. Numbers used on each island are given as reference for future workers. Broken tags which were not put on animals are not indicated, and are the reason for the discrepancy between the number of seals tagged and the tag numbers listed for each island.



Island	Adult		Subadult			Juvenile			Total	Numbers Used
	♂	♀	♂	♀	?	♂	♀	?		
French Frigate Shoals*		2		7	3			2	14	169 - 182
Laysan Island	5	5	8	6	2	1			27	2-8,10,11, 13 - 31
Lisianski Island	6	4	16	4	4	1			35	32 - 68
Pearl and Hermes Reef	28	27	13	23	3				94	1,9,12, 69 - 168
Kure Atoll	55	78	7	9		24	32		205	200 - 414
Total	94	116	44	49	12	26	32	2	375	

\* 23° 5' N Lat, 166° 1' W Long

: Table 1



west of Green Island. All counts are presented graphically in Figure 1.

The total number of seals seen, and the number and identity of tagged seals, are available for each count on the main island. By tabulating

a running total of the number of adult group animals tagged prior to

each census it is possible to calculate the percentage of the tagged

adult group seen on any one census (Table 2). The mean percentage of

tagged adult group seen during censuses is 9.2 (SD 6.9) (see Figure 2).

A chart was constructed to show the months in which each individual was

observed (Figure 3). From this chart it is possible to determine the

number of different tagged individuals observed in each month. The mean

number of different individuals observed for 22 consecutive months is

43.4 (SD 21.5). The mean percentage of the total tagged adult group

observed in 40.4 (SD 19.6). The number of different individuals observed

during a given month was used instead of the cumulative total of tagged

seals to calculate an adjusted percentage of tagged seals observed on

any given census, with the assumption that only those seals seen at some

time during the month composed the total population of tagged seals for

that month (Figure 2). The mean adjusted percentage of tagged adult group

seen per census is 23.5 (SD 18.1). The data were examined for population

turnover by determining the number of <sup>tagged</sup> individuals for each month which

were observed during the previous month and the number <sup>of newly tagged animals</sup> for the month.

The frequency distribution for the percentage of new animals each month

is plotted in Figure 4.

Recent population estimates for <sup>three</sup> four Leeward islands are presented in Table 3 with the authority for each census and the date it was made.

adult group  
is considered as by  
most adults as  
newly arrived  
individuals for  
they are.

three  
of newly tagged animals  
? Newly tagged?  
Aluk



Figure 1: Fluctuations in numbers of adult group seals at Kure Atoll. Continuous lines connect census figures from 70 beach counts on the main island.  $\Delta$  are counts made on the sandspits in 1964, 0 are counts made on the sandspits in 1965.



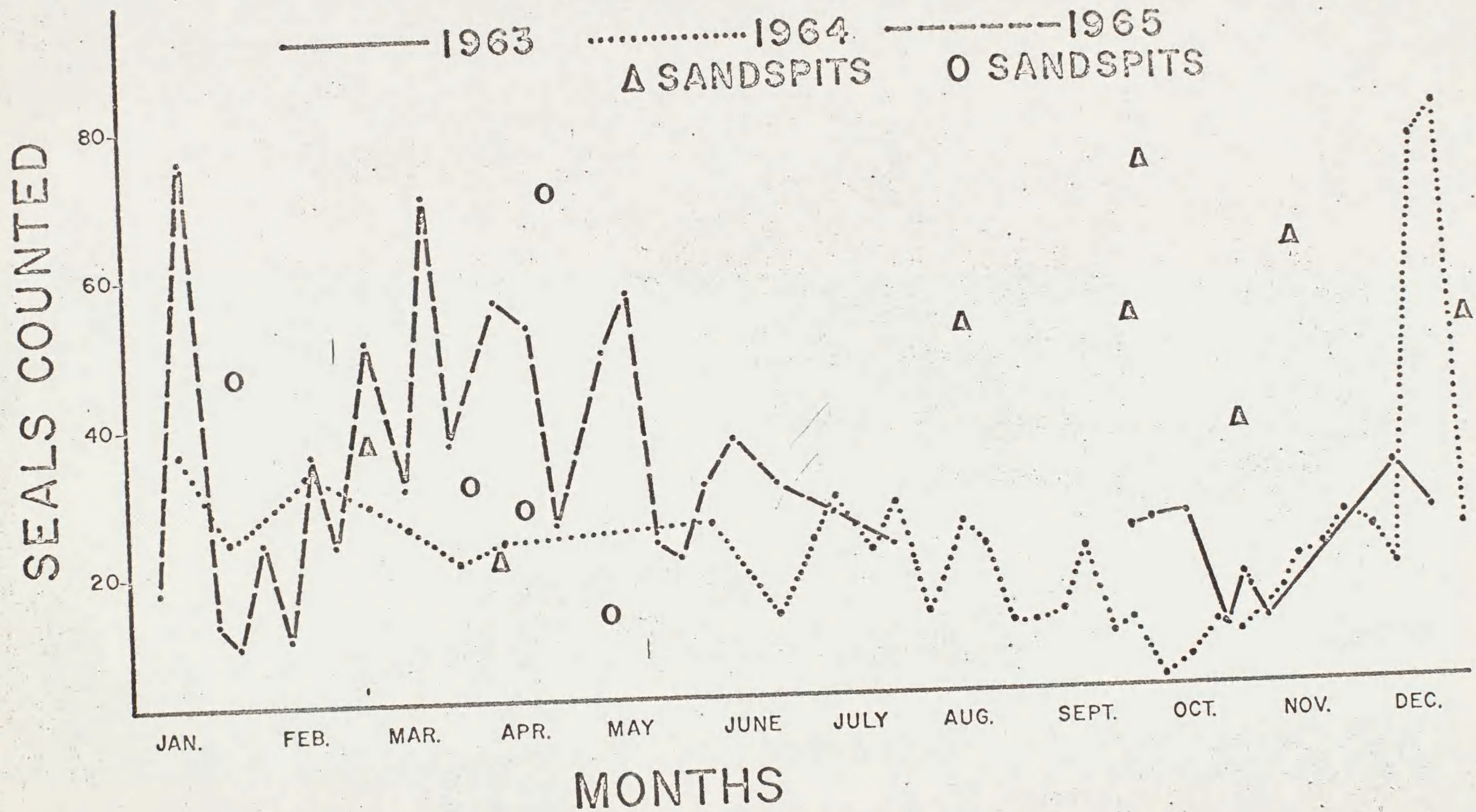


Fig 1



Table 2: Census data on monk seals, Green Island, Kure Atoll.

Column 1 - adult group seals seen; 2 - tagged adult group seals seen; 3 - adult group seals tagged to date; 4 - percent tagged adult group seals seen; 5 - adjusted percent tagged adult group seals seen; 6 - different individuals seen this month; 7 - percent total tagged seen in this month; 8 - adult group seen previous month; 9 - new adult group for this month; 10 - percent new adult group seen = turnover.



Table 23

Date	1	2	3	4	5	6	7	8	9	10
1 Oct. 1963	22	3	30	10.0	10.0	60	80.0	17	43	71.6
6 Oct.	23	9	52	17.3	15.0					
16 Oct.	24	7	53	13.2	11.7					
25 Oct.	8	3	72	4.2	5.0					
31 Oct.	15	4	73	5.5	6.7					
1 Nov. 1963	13	3	75	4.0	8.6	35	44.3	25	10	28.5
7 Nov.	9	5	79	6.3	14.3					
12 Dec. 1963	29	11	80	13.8	73.3	15	18.7	5	10	66.6
22 Dec.	23	5	80	6.2	33.3					
14 Jan. 1964	34	11	80	13.8	52.4	21	26.2	5	16	76.1
28 Jan.	22	11	80	13.8	52.4					
3 Feb. 1964	24	6	80	7.5	13.3	45	56.2	13	32	71.1
18 Feb.	32	8	80	10.0	17.8					
5 March 1964	27	18	84	21.4	29.5	61	67.7	35	26	42.6
16 March	23	9	89	10.1	14.8					
30 March	18	12	90	13.3	19.7					
11 April 1964	22	12	92	13.0	27.9	43	46.7	25	18	41.8
* May 1964			92			30	32.6	14	16	53.3
8 June 1964	23	8	107	7.5	29.6	27	25.2	13	14	51.8
24 June	12	4	107	3.7	14.8					
3 July 1964	22	8	107	7.5	16.3	49	45.8	16	33	67.3
10 July	26	12	107	11.2	24.5					
20 July	19	4	107	3.7	8.2					
27 July	26	11	107	10.3	22.4					
5 Aug. 1964	12	7	107	6.5	22.6	31	29.0	19	12	38.7
13 Aug.	23	10	107	9.3	32.3					
20 Aug.	20	3	107	2.8	9.7					
28 Aug.	9	1	107	0.9	3.2					
4 Sept. 1964	9	1	107	0.9	5.6	18	16.8	6	12	66.6
11 Sept.	11	2	107	1.9	11.1					
18 Sept.	19	1	107	0.9	5.6					
25 Sept.	7	1	107	0.9	5.6					
1 Oct. 1964	9	3	107	2.8	9.7	31	29.0	7	24	77.4
9 Oct.	2	0	107	0.0	0.0					
15 Oct.	4	0	107	0.0	0.0					
23 Oct.	8	8	107	7.5	25.8					
29 Oct.	7	2	107	1.9	6.4					
6 Nov. 1964	13	6	108	5.6	9.2	65	57.0	24	41	63.0
13 Nov.	17	7	109	6.4	10.8					
22 Nov.	18	10	114	8.8	15.4					
28 Nov.	23	9	114	7.9	13.8					
5 Dec. 1964	21	8	114	7.0	11.3	71	62.3	57	14	19.7
12 Dec.	16	6	114	5.3	8.4					
19 Dec.	73	28	114	24.6	39.4					
26 Dec.	78	31	114	27.2	43.7					
31 Dec.	21	12	114	10.5	16.9					



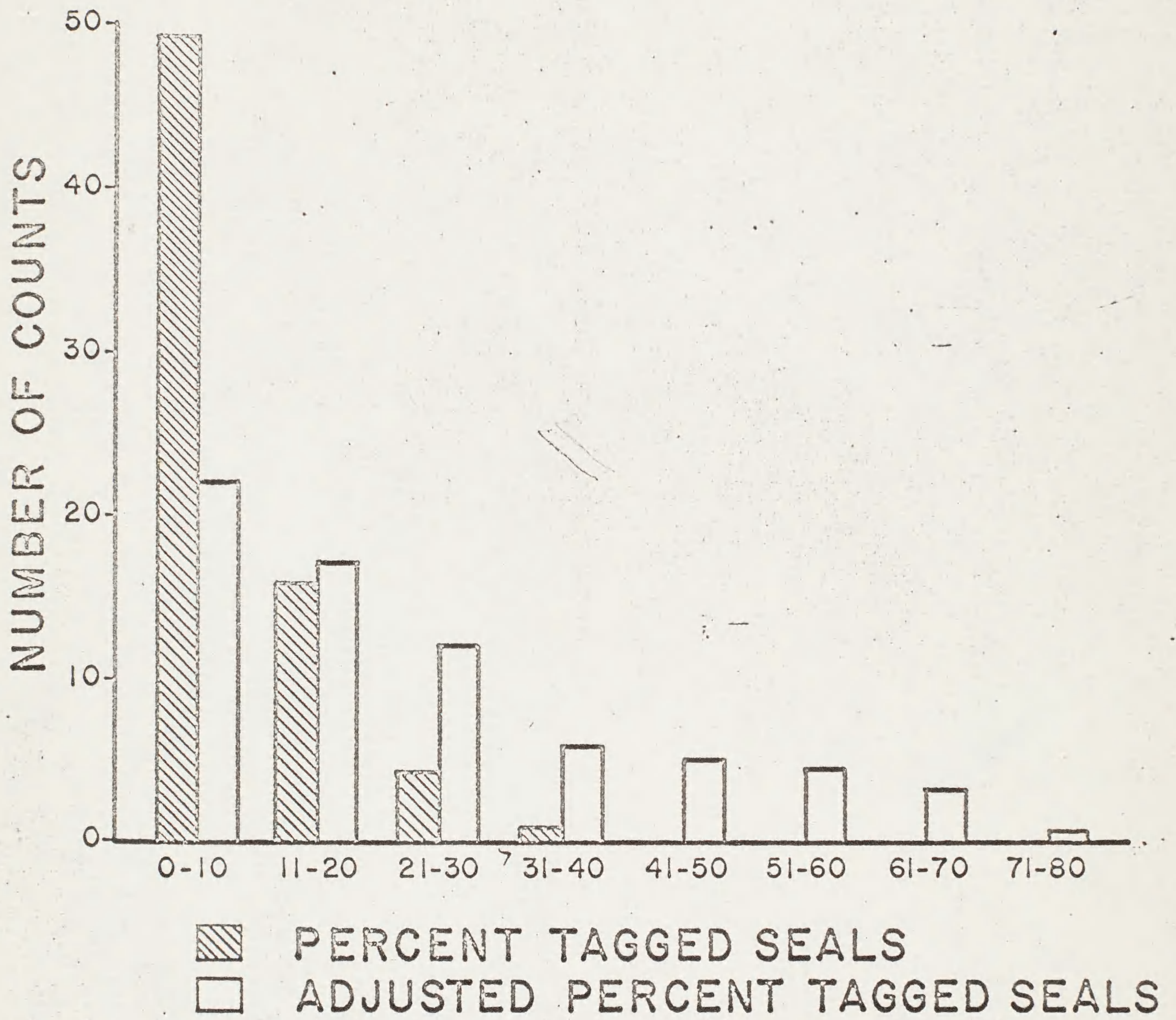
Date	1	2	3	4	5	6	7	8	9	10
9 Jan. 1965	16	9	114	7.9	10.1	89	66.4	61	28	31.4
16 Jan.	74	43	134	32.1	48.3					
23 Jan.	12	3	134	2.2	3.4					
30 Jan.	8	6	134	4.5	6.7					
6 Feb. 1965	22	10	134	7.5	23.8	42	31.1	40	2	4.7
13 Feb.	9	7	134	5.2	16.7					
20 Feb.	34	15	135	11.1	35.7					
27 Feb.	22	9	135	6.7	21.4					
6 March 1965	49	16	135	11.8	19.0	84	60.9	38	46	54.7
14 March	29	9	135	6.7	10.7					
21 March	68	35	136	25.7	41.7					
27 March	35	8	138	5.8	9.5					
3 April 1965	42	19	148	12.8	34.5	55	36.9	51	4	7.2
10 April	54	25	148	16.9	45.4					
18 April	51	31	149	20.8	56.4					
24 April	24	24	149	16.1	43.6					
8 May 1965	47	27	149	18.1	58.7	46	30.9	32	14	30.4
15 May	55	30	149	20.1	65.2					
22 May	21	14	149	9.4	30.4					
29 May	19	14	149	9.4	30.4					
5 June 1965	28	8	149	5.4	33.3	24	16.1	15	9	37.5
12 June	35	16	149	10.7	66.7					
26 June	28	7	149	4.7	29.2					
10 July 1965	25	9	149	6.0	64.3	14	9.4	9	5	35.7
24 July	20	2	149	1.3	14.3					

\* no counts made in this month



Figure 2: Frequency distribution for percentage tagged adult group and adjusted percentage tagged adult group observed per census. Mean percentage tagged adult group = 9.2 (SD 6.9). Mean adjusted percentage tagged adult group = 23.5 (SD 18.1).





Fig<sup>2</sup>



Figure 4: Monthly distribution of percentage of (new adult group) individuals observed.

What are new  
Adult groups?

returns on animals  
tagged during the  
month of survey???



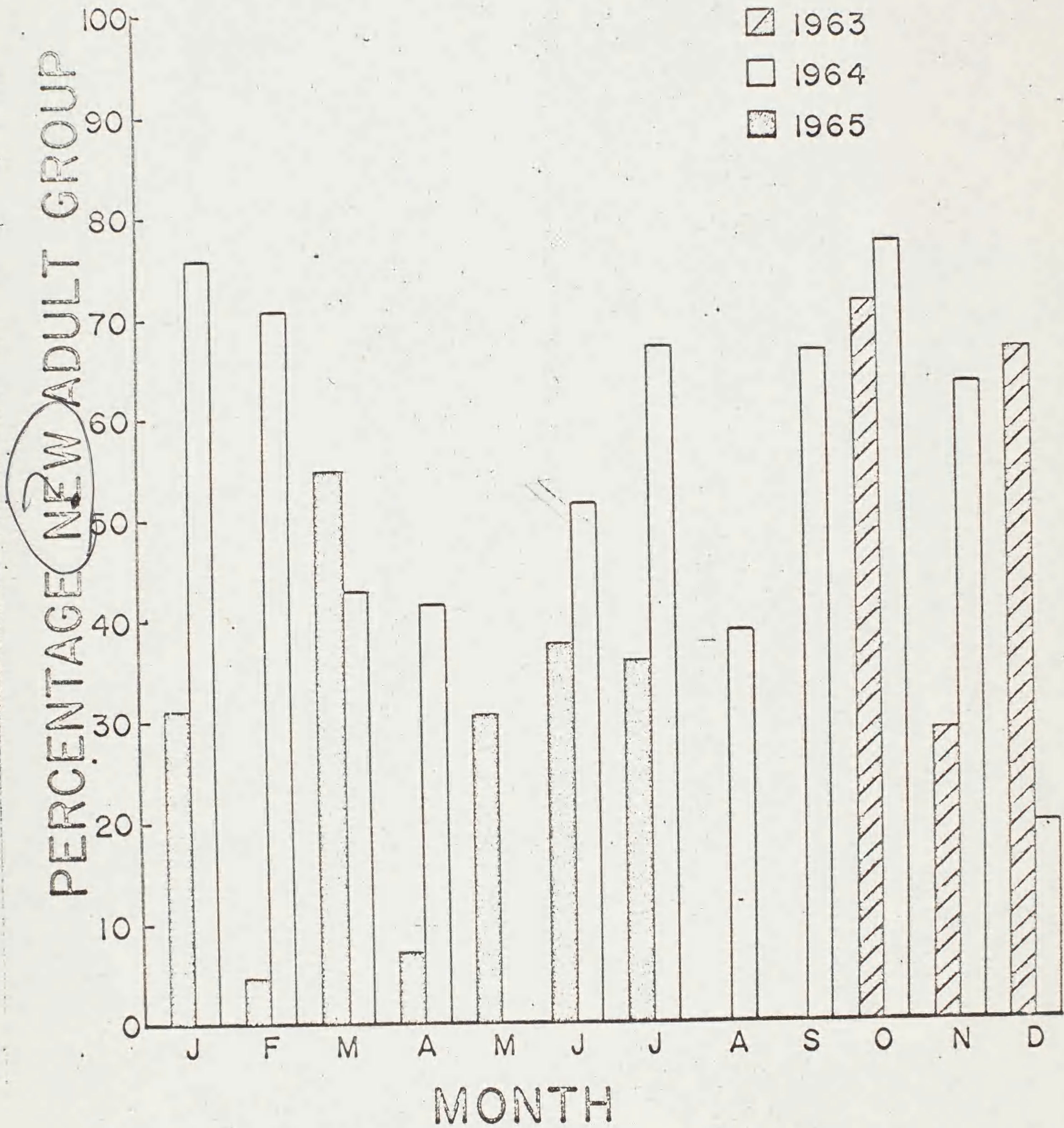


Fig 4



Table 3: Recent population estimates for Laysan Island,  
Lisianski Island, and Pearl and Hermes Reef.  
Total to left of virgule, pups to right.



Feb. 3

Month	Year	Laysan	Lisianski	Pearl-Hermes	Authority*
April	1957	233/19	256/15		1
May	1957			290/33	1
June	1957	177/			2
May	1958	326/46			3
June	1958		281/34	338/52	3
April	1959	223/			4
July	1959	234/			5
March	1961	229/	173/1		6
Sept.	1961	225/			5
June	1962	261/23			7
March	1963		210/1	201/0	8
March	1964	310/22	180/7	121/0	8
Aug.	1964		144/1	125/2	8
Sept.	1964	252/0	121/0		8
March	1965	243/31	187/15	175/2	8
July	1965		161/0		8
Aug.	1965	210/15			8

\*1) Kenyon and Rice, 1959; 2) Woodside, 1957; 3) Rice, 1960;  
 4) Smythe, 1960; 5) Udvardy, 1961; 6) Woodside and Kramer,  
 1961; 7) Kramer and Beardsley, 1962; 8) this paper.



If more than one figure was given for a visit only the highest is presented here. Pup figures are given if the authors indicated that they were counted separately or looked for and not found. Survey counts from Kure are not included.

*Authors of Whit 33*

*✓ September was clear*

Inter and Intra-atoll Movement - Eight instances of inter-atoll movement were recorded, including two round trips (Figure 5). Three individuals, an adult male and a subadult male and female, tagged on Laysan Island ( $25^{\circ} 4' N$  Lat,  $171^{\circ} 4' W$  Long) in February 1963 were subsequently reported at Pearl and Hermes Reef, 280 miles to the northwest, all in March 1964.

*in March 1964 -*

The adult male was found back on Laysan in March 1965. A subadult male tagged on Laysan in February 1963 was found on Lisianski Island ( $26^{\circ} 0' N$  Lat,  $173^{\circ} 5' W$  Long) in March 1964, a move of 130 miles. An adult female tagged at Pearl and Hermes in February 1963, was found at that atoll in March 1964, and then on Lisianski in March 1965. These islands are 150 miles apart. An adult female tagged at Pearl and Hermes in March 1963 was found dead on the beach at Midway Island ( $28^{\circ} 1' N$  Lat,  $177^{\circ} 1' W$  Long), 100 miles to the northwest, in December 1964. There were no apparent external injuries, according to the report received from Navy personnel.

*Does this count as in top the census.*

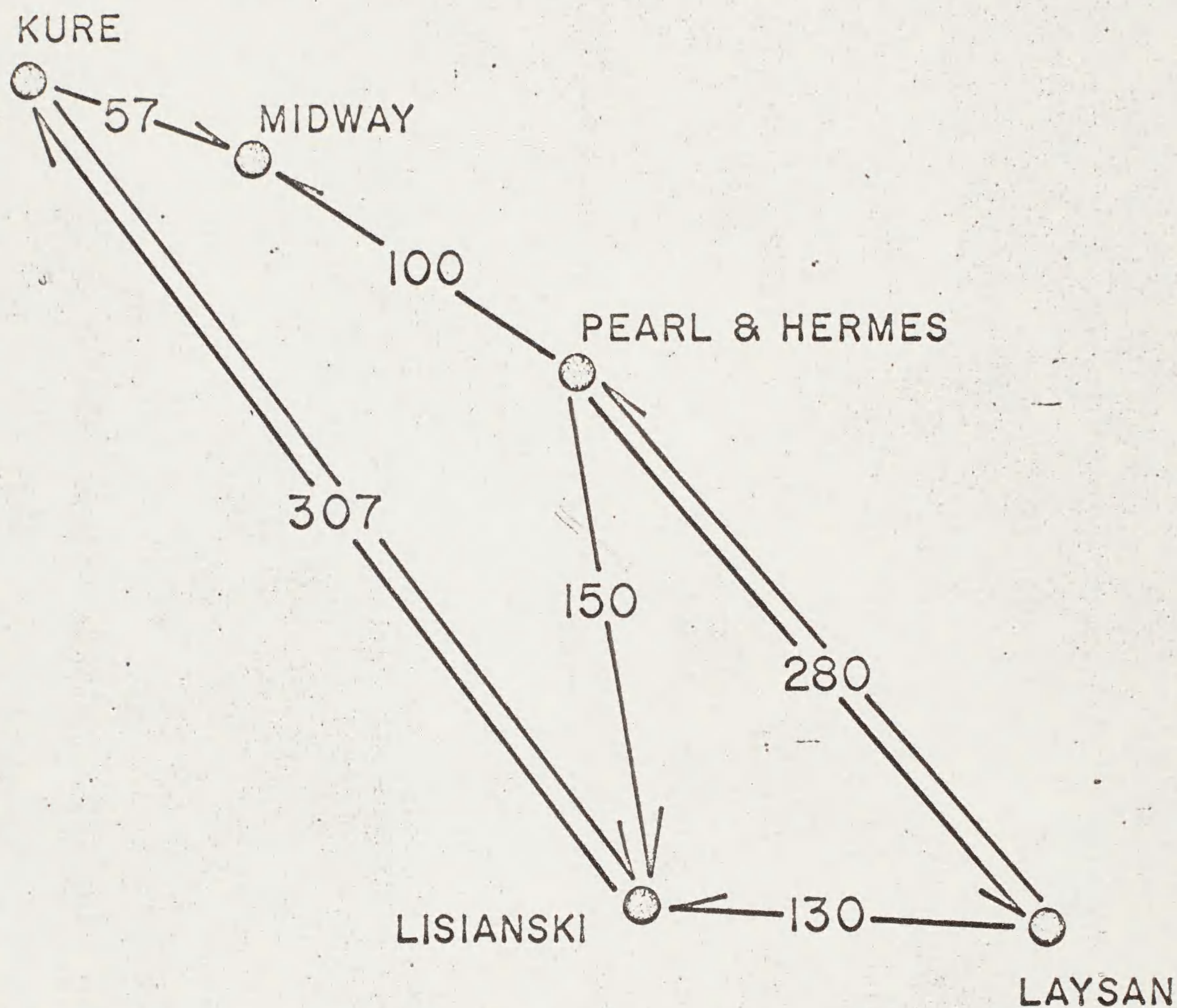
A subadult male tagged at Kure in October 1963, and last seen there in March 1964 was seen at Midway, 57 miles east of Kure, in November 1964. This seal was with a second tagged individual whose number could not be read. An adult male tagged on Kure in October 1963 and last seen there in March 1964 was found on Lisianski, 307 miles to the southeast, on 12 March 1965. On 27 March 1965 he was back at Kure.

5



Figure 5: Inter-atoll movement of monk seals, not drawn  
to scale.





INTER - ATOLL  
MOVEMENT IN MILES  
(NOT TO SCALE)

fig 5



*overlooking this  
term ???*

Only 6 of the 27 seals tagged at Laysan in February 1963 have been subsequently recorded, and only three of these at Laysan, including the male which moved to Pearl and Hermes and back to Laysan. Five of the 35 seals tagged in March 1963 on Lisianski have been subsequently reported on that same island. There are 52 subsequent sightings of 32 different individuals from the 94 seals tagged at Pearl and Hermes in March 1963. Two of these sightings represent inter-atoll movements described above. The remaining 50 sightings represent intra-atoll movements, in which 22 animals were found on the same islet as the previous record, and 28 on different islets. At Kure, where 140 adult group seals were observed subsequent to tagging, 1927 returns are for the same atoll.

*Woot*

Adult Mortality - Relatively few dead adults were found. On two occasions large sharks with parts of seal in their stomach were caught within a few miles of islands. Two dead adults <sup>seals</sup> were found on the beach at Laysan, one in the water off Lisianski, and another on the beach at that island, in the spring of 1963. An adult skeleton was found at Pearl and Hermes in March 1963 and another at French Frigate Shoals (23° 5' N Lat, 166° 1' W Long) in June of that year. Two dead adults were reported from Midway in 1964, one the tagged individual mentioned above. Three dead adults were found at Kure in two years. All were believed victims of vandalism.

*8*

Six individuals with shark inflicted injuries were observed at Kure. A seriously wounded adult female was first observed 12 January 1965 (Figure 6). The two large wounds, about 30 cm long and at least 4 cm deep, passed through blubber and into muscle and viscera. The animal was badly



Figure 6: Nature of shark-inflicted wounds to adult female  
monk seal, photographed at Kure Atoll, 12 January  
1965 by Lt. D. H. Worth, USCG.



emaciated by 20 January and the section between the wounds appeared to be sloughing off. This piece was lost by 20 February and the entire area was covered with a large fatty scab. The wounds appeared healed by 14 March, but reopened in early April. When last observed this animal was listed as "wounded" by Coast Guard personnel on 24 April. An adult found in November 1963 had a large bite-shaped section missing from the lower left side. A subadult tagged in October 1963 had a recent wound about 60 cm long on its dorsum. A year later this wound was only partially healed, and it did not close completely until February 1965. A female found with a new pup early in 1964 was alone two weeks later and her venter was covered with fresh bleeding slashes 20 to 25 cm long and about 2.5 cm deep. The pup was presumed a shark victim. In March 1964 a subadult was found with severe slash wounds to its left fore flipper and adjacent body regions. During the summer this seal spent much of its time on the beach in the sun, and the badly damaged tissue gradually dried up and was lost along with phalanges and metacarpals. By October of that year skin had completely covered the stump.

During a fight between three males one of them received a bite just over a fore flipper which removed a piece of flesh about 9 cm in diameter. Star-shaped scars observed in several animals may have resulted from tissue regeneration in such a bite wound. Several other adults were observed with a variety of circular and slash-shaped scars.

Food Habits - On two occasions recognizable food items were found regurgitated in regularly used seal wallows, and the contents of three stomachs were examined. Two stomachs contained large numbers of cestodes

Needs  
Clarification  
they are not  
fish  
wallows  
are they?  
Bad word ???



and nematodes, a few cephalopod beaks, and teleost bones. A third, in addition to nematodes and cestodes, contained the remains of several spiny puffers (Tetraodontidae), a goatfish (Mullidae), several octopuses (Octopus sp.) and several morays (Muraenidae). Regurgitated items included five octopuses, the largest with a tentacle spread of about 60 cm, eight wrasses (Labridae), a parrot fish (Scaridae) about 46 cm long, and a moray about 1.5 m long.

An adult was observed as it caught silvery fish about 28 cm long in shallow water off the beach. It submerged for periods of 95 to 110 seconds. The head was raised out of the water and tilted back while the animal chewed, and occasionally the food was flipped about in the mouth. Three fish were caught and eaten in a ten minute period.

#### DISCUSSION

The total number of monk seals now tagged, including 129 tagged by Kenyon and Rice (per. comm.), is 504, or one half to one third of the estimated total population (Kenyon and Rice, 1959; Rice, 1960). Only 6 of the 205 animals tagged at Kure are known to have lost tags, and only 9 adult group animals were not subsequently recorded. These data suggest that tag loss is minimal.

The historical data from the last century suggest that the monk seal was nearly exterminated by about 1870 (see Kenyon and Rice, 1959 for summary). Very few animals were seen in the Leewards between 1882 and 1923, and indeed even into the 1950's. Since this latter period there have been 12 independent counts of the herd at Laysan, 9 at Lisianski, and 6 at Pearl and Hermes Reef. Information gathered by the Survey over

*Are you sure the animal  
ingested only one fish per  
feeding attempt??*

⊗

⊗



a two year period at Kure indicates that several factors must be considered in censusing the monk seal. The number of individuals on the beach at any one time may be affected by season, weather extremes, and time of day, but no known rule can be applied with assurance to any set of circumstances. Pups can swim at birth and may go out into shallow water with the female within two weeks, and thus could be missed on a beach count. The low returns (1) of 56 pups tagged at Kure strongly suggest that pups leave the island within two months of parturition and do not return for several years. There is a tendency for fewer seals to be present on the beach during the day in the warmer months from May through October. In general the animals avoid high temperatures, high winds, and driving rain, apparently preferring to be in the water during weather extremes. Weather data are available for each of the days on which seals were counted at Kure, and there is little apparent correlation, with one exception, between weather conditions and numbers present on the beach. The peaks in December 1964 and January 1965 are related to a severe storm in December which obliterated all the sandspits west of Green Island which are normally favorite hauling grounds. These sandspits were reformed by March 1965, and thus this does not explain the peak in that month. There are usually more animals on the beaches at night than in the day. Human disturbance at Midway Island may have reduced the herd even further from that previously estimated (Kenyon and Rice, 1959; Rice, 1960). Construction of the Coast Guard facility at Kure Atoll, with a concomitant increase in human disturbance to the resident herd, may have reduced the number of animals which haul out on Green Island, but lumping Green Island counts

✓ against  
other  
islands

(9)



with those available for the sandspits west of the island gives a figure which compares favorably with censuses made on the island before construction of the facility.

Calculations performed on the censuses taken since 1956 suggest mean populations of 230 (SD 32) for Laysan, 182 (SD 42) for Lisianski, and 193 (SD 62) for Pearl and Hermes Reef. The large standard deviations reflect the great variability observed in the counts. However, as natality and mortality rates are apparently low for this species (see Kenyon and Rice, 1959; Rice, 1960; and Wirtz, 1968), and there is little evidence for inter-atoll movement, it seems reasonable to accept the high counts made during the last ten years as estimates of the adult group utilizing these three islands, or 288 for Laysan, 247 for Lisianski, and 286 for Pearl and Hermes.

The mean percentage of tagged seals observed during 70 counts suggests that a very small percentage of the tagged portion of the herd can be found on land at any given time. The assumption is made that the tagged animals are distributed at random within the population of seals utilizing Kure Atoll, and that there is little turnover. If these assumptions are met, then, on the average, the number of seals seen on the beach during any one census is less than 10 percent of the resident herd. The mean number of adult group animals observed for the 70 counts is 25, suggesting a total population of 250 adult group seals. Extending this theory to counts available for three other islands suggests populations of 2300 for Laysan, 1820 for Lisianski, and 1930 for Pearl and Hermes. On the basis of this calculation the estimate of the world population would be



raised to 13,500 adult group animals.

There is little actual evidence that the tagged seals are distributed at random within the atoll. However, if tagged seals do not mix randomly through the population, that is if each individual tends toward exclusive use of a given area, then an excessively high percentage of tagged individuals would be expected. As this was not the case, the estimate tends to be conservative. If the tagging experience caused the animal to leave the atoll the estimate would be biased in the opposite direction. Repeat observations of all but nine tagged animals rule out this factor. In spite of the fact that movement is poorly documented it must be remembered that observations on the uninhabited islands of Laysan, Lisianski, and Pearl and Hermes are extremely scarce. The documentation of any inter-atoll movement must then be largely due to chance, and one should probably expect more than has been reported. The mean percentage of new adult group animals observed for 22 months is 47.2 (SD 21.6). This means that anywhere from 25 to 69 percent of the adult group animals observed in a given month were not seen during the previous one. The 140 adult group seals which were observed in more than one month at Kure had a collective total of 310 absences from 1 to 12 months in length. The mode of these absences is one month and the median two.

The limited movement recorded, the percentage of new individuals, and the length of absences suggest a slow steady turnover in the composition of the adult group utilizing a given island. This may be a cycling through all utilized Leeward islands or primarily exchange between two or



three islands. Animals occasionally seen among the main Hawaiians may represent stragglers at the periphery of this cycling, or those driven <sup>10</sup> off course by some weather, wind, or current condition. The mean adjusted percentage of tagged adult group observed per census at Kure may be a better representation of the actual number of adult group seals utilizing the atoll at any given time. Calculations using this figure suggest that the mean size of the adult group using Kure at any one time is 106.

The large standard deviations obtained for all population calculations emphasize the great variability in the data. All indications are that only a small percentage of the adult group utilizing Kure at a given time are on the beach on any given day. This, plus the evidence assembled in support of population turnover suggest that all estimates of the total number of Hawaiian monk seals based upon actual counts are low. The adjustment factor lies somewhere between two and ten. Present data are insufficient to further refine the estimate. The true population size may explain the apparent dissolution of tagged seals into the population, when the rate of loss of tags seems low, and does not satisfactorily explain the disappearance of tagged animals. The postulated population size may also explain why it was, or may have been, possible to kill large numbers of monk seals in the middle of the last century (see Bailey, 1952; Kenyon and Rice, 1959). The apparently rapid comeback made by the species in the face of a low reproductive rate may be partly due to an increase in the frequency of censuses during the last ten years. Only an intensive program of tagging and recovery will answer the questions now raised con-

*The comeback  
to monk seals  
is an unusual  
phenomenon*



cerning the population dynamics of the Hawaiian monk seal.

#### ACKNOWLEDGMENTS

The Survey is indebted to the officers and men of the United States Coast Guard Loran Station at Kure Atoll for their cooperation during all aspects of the research program, and especially for their aid in tagging adult seals and collecting return information on tagged animals. Research in the Leewards was made possible through the cooperation of the United States Fish and Wildlife Service, the Department of Lands and Natural Resources of the State of Hawaii, the United States Navy, and the United States Coast Guard.

While various Survey members participated in the tagging and censusing, Robert R. Fleet, Cameron B. Kepler, and Dennis L. Stadel played particularly significant roles in the collection of data at Kure Atoll.

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Table Observations of Hawaiian Monk Seals at Nihoa Island.

<u>Dates of Survey</u>	<u>No. Seen</u>	<u>Remarks and References</u>
1867 27 Apr	About a dozen	Seen on beach. Several shot by King Kamehema IV (Palz <sup>Palz</sup> in Emory, 1928:9).
1940 7-15 Aug	0	(Vanderbilt and de Schauensee, 1941: ).
1953 21-22 Dec	0	(Kenyon & Rice, 1959:217).
1954 18 Mar	0	(Kenyon & Rice, 1959:217).
1957 20 Dec	0	(Rice, 1960:377).
1964 6-7 Mar	1	A seal seen lying on the small beach on the west side of Adam's Bay on 6 Mar. An adult seen swimming offshore later in the day (POBSP). <i>Walker's observation</i>
23-24 Sep	1	An adult seen swimming near the landing site (BSFW, POBSP).
1965 13-14 Mar	6	Three seen each day. Two were adults (a male and a female) and four were subadults (one a female) (BSFW, POBSP).
1966 28 Jul - 1 Aug	0	(BSFW, POBSP).
1967 8-9 Mar	0	(BSFW, POBSP).
2-3 Sep	0	(BSFW).
1968 7-9 Mar	0	(BSFW, POBSP)
24-25 Aug		
1969	0	(BSFW).
29 May	1	(BSFW).

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has a*

*and  
sincock report any date?  
wrote 11/1*



Table . Observations of Hawaiian Monk Seals at Necker Island.

<u>Dates of Survey</u>	<u>No. Seen</u>	<u>Remarks and References</u>
1894 27-29 May	?	A few seals seen by the annexation party (Emory, 1928:56).
1964 26 Jul	6	Seen swimming in Shark Bay (BSFW).
25-26 Sep	12	Adults seen hauled out on a rocky shelf on 25 Sep. Six were females; the sex of the rest was not determined (BSFW, POBSP).
1965 15 Mar	7	Basking on the Shark Bay side of the shelf connecting the two parts of the island. Six were adults (of which 2 sexed were male and female) and 1 was a subadult female (BSFW, POBSP).
1966 10-11 Sep	6	Seen in the same locality as in previous observation. Four were adults (of which 2 were females and 1 was a male) and 2 were subadults. One female was molting (BSFW).
1967 10 Mar	12	Six adults (of which 1 was a male and 2 were ) and 6 yearlings (one a male, one a female) (BSFW).
15 Sep	15	Basking in same locality as above. Thirteen were adults (of which 2 were sexed as males and 5 as females), 1 was a yearling male and 1 was a yearling female (BSFW).
1968 Aug	?	<i>Several seen. No time for more thorough check.</i>
1969 22 Mar	20	Seen on the Shark Bay side of the junction between Northwest Cape and the mainland. Seven were adult



Table (cont.).

<u>Dates of Survey</u>	<u>No. Seen</u>	<u>Remarks and References</u>
		males, 4 were pregnant females, 3 were subadults (1 male, 2 female) and 6 were not aged or sexed BSFW).
1969 30 May	6	Basking on rock ledges (BSFW).



Notes taken by David Woodside of the Hawaiian Department of Fish and Game on a survey of Laysan Island in July 1957 (Extracted from files of Hawaiian Fish and Game by R.B.Clapp, September 1967)

Tentative plan of trip - 1/2 day exploring island for ducks noting stage of breeding activity, numbers; 1/2 day catching and crating ducks; 1 day to observe seabirds; 3 days counting by plot densities; 1 1/2 days photographing birds; 1 day and night banding albatross.

Results of trip - 177 seals counted on 30 June. Saw only 1 newborn pup and 5 or 6 black pups.

Notes on seals and albatrosses - Tagged 25 seals on west beach -- MS 51-59 females; 60-64 males; 65-66 females; 67-69 males (all tagged June 26, 1967) 70-75 females; (tagged June 28, 1957); 51-52 (yearlings) 53-54 (black pups) 55-61 (yearlings) 63-64 (black pups) 64 with adult female 65; 66-67 (yearlings) 68 (brown pup) 69-70 (yearlings) 71 (2 years) 73-75 (yearlings) "Majority of those listed as yearlings were probably large pups but a few were yearlings I'm sure." Noted a few seals feeding in shallow water at night.

Albatross strip count of 6,400 yards and 20 yards wide made. 1,534 Laysan Albatross young to 80 Black-footed Albatross young = 40,500 Laysan if there are 700 acres of nesting Laysans and 2,100 Black-footed Albatrosses. 200 Laysan young banded (597-38401-600) in strip 25 yards wide west from ironwood to lagoon shore. Using this density compute 215,000 Laysan for 700 acres. 200 Black-footed Albatross young banded (579-38601-800) - from west shore of lagoon at point west of tree and north around lagoon. Only 9 found on lagoon half, so at point opposite tree on east beach cut across and banded. rest on east sea beach in strip 50 yards by 200 yards.

Plants collected by C.W. Daniel September 1959 now in the Bishop Museum and identified by Neal. 39 specimens of 19 species c. 7/24/59

Revised estimates from Woodside trip

Black-footed Albatross	9,000 young	Laysan Teal	580 adults
Laysan Albatross	45,000 young	Golden Plover	20
Christmas Shearwater	10,000 adults	Ruddy Turnstone	150
Wedge-tail Shearwater	40,000? adults	Wandering Tattler	20
Bonin Petrel	- ---- post-nesting	Br.thighed Curlew	50
Bulwer's Petrel	3,000 adults	Gray-backed Tern	4,000 adults
Sooty Petrel	----- post-nesting	Sooty Tern	400,000 adults
Red-tailed Tropicbird	1,000 adults	Noddy Tern	10,000 adults
Red-footed Booby	1,000 adults	Hawaiian Noddy	1,000 adults
Brown Booby	50 adults	Fairy Tern	500 adults
Blue-faced Booby	300 adults	Laysan Finch	5,000 adults
Great Frigatebird	1,500 adults		

Ducks -- broods of 4 young 3 days old and 3 young 3 days old seen. One female seen with four young 2 days old; another adult seen with 3 young 1 week old (lagoon edge) One pair of teal seen on the windward beach near morning glory. Also seen 1 male with 3 young; a pair with 6 young about 1 week; a female with 1 young about 4 days; a female with 2 young about 1 week; a female with 1 young about 1 week; a female with 3 young about 1 week. ----- One young Bonin Petrel seen on surface during morning. ----- A Blue-faced Booby with 2 eggs seen. ----- A Wedge-tail found with eggs (or several of them.



Orig Given to Jane  
17 Mar 70

Table . Population Counts of Hawaiian Monk Seals on Lisianski Island

Date of Survey	No. of <sup>1</sup> Seals Counted	Adults		Subadults		Yearlings		Pups		Remarks, Source of Data
		No.	%	No.	%	No.	%	No.	%	
1951 13 May	195	---	---	---	---	---	---	---	---	Newly born pups.
1954 26 Mar.	115	---	---	---	---	---	---	---	---	seen (POBI)
1957 15 April	256	---	---	---	---	---	---	15	5.9	Swina, 1959 Kenyon & Rice, 1959
1958 28 June	281	---	---	---	---	---	---	34	12.1	Rice, 1960
1961 9 March	172	117	68.0	---	---	36	20.9	19	11.0	Woodside & Kramer, 1961(ms.)
1963 14 Feb	144 <sup>2</sup>	---	---	---	---	50(?)	---	3	2.1	POBSP
12 March	96 <sup>3</sup>	---	---	---	---	---	---	13	---	POBSP
1964 12 March	180	102	56.7	71	39.4	---	---	7	3.9	Walker 1964 notes BSFW
21 August	144	---	---	---	---	---	---	1	0.7	POBSP
18 Sept	121 <sup>4</sup>	85	72.0	---	---	33	28.0	0	0.0	BSFW
1965 12 March	187 <sup>5</sup>	---	---	---	---	---	---	15	8.0	POBSP
13 July	161	---	---	---	---	---	---	---	---	POBSP

<sup>1</sup> Figures in this column may be larger than the total number listed in the other columns. (On a given count some of the seals counted may not have been aged. Percentages are usually based on the total number of animals aged which may not be the same as the total count figure. In some instances pup percentage is figured as percentage of total count.

<sup>2</sup> Pup figure includes 1 dead pup and 1 50-75 pound animal. "Yearling" class probably subsume some which would be more typically treated as subadults. In his ms. Wirtz treated animals tagged as yearlings (in original data) as subadults. Count listed above based on tagging operation with count of other seals seen. Originally totaled by Wirtz (in field rept. and ms.) as 210 but retotaled by RBC as above. 210 "count" made in Feb. listed in ms. as March.

<sup>3</sup> Total includes two dead pups and a dead adult. Complete count made around beaches but others had preceded count makers down beach thus accounting for this unrealistically low figure.

<sup>4</sup> Total includes 3 unaged animals.

<sup>5</sup> Figure includes 1 dead adult.



Additional Corrections in ink are for following sheet

Table (cont)

Date of Survey	No. of seals counted <sup>1</sup>	Adults		Subadults		Yearlings		Pups		Source of Data, Remarks
		No.	%	No.	%	No.	%	No.	%	
1965 11 March	244 <sup>8</sup>	---	---	---	---	---	---	32	13.1	POBSP
6 August	210	100	47.6	95	45.2	---	---	15	7.1	POBSP
1966 26 March	193	110	57.9	52 <sup>9</sup>	26.9	---	---	31	16.1	BSFW
10 June	242	123	50.8	51 <sup>10</sup>	21.1	54	22.3	14	5.8	POBSP
17-18 Sept	212	---	---	---	---	---	---	---	---	BSFW
21 Oct	120	64	53.3	---	---	25 <sup>11</sup>	20.8	31	25.9	POBSP
1967 19 March	199 <sup>12</sup>	112	56.3	59	29.6	---	---	28	14.1	BSFW
11 June	89 <sup>13</sup>	46	51.7	9	10.1	7	7.9	27	30.3	POBSP
21 Sept	181	117	64.6	36	19.9	28	15.5	0	0.0	BSFW
13 Dec	151	97	64.2	18	11.9	36	23.8	0	0.0	BSFW
1968 18 March	179	86	48.0	41	22.9	38	21.2	14	7.8	BSFW
Aug-Sept	Data not available									BSFW
1969 26 March	183	112	68.7	---	---	21 <sup>14</sup>	12.9	30	18.4	BSFW
2 June	211 <sup>15</sup>	149	81.8	4	2.2	---	---	29	(16.4) 15.9	BSFW
9 Sept	147	126	85.7	15 <sup>16</sup>	10.2	---	---	6	4.1	BSFW

<sup>8</sup> In field report Wirtz reported 212 adults and 32 pups counting 1 dead one. Adult category obviously includes anything not a pup.

<sup>9</sup> Stated to be subadults or yearlings in report.

<sup>10</sup> In this count divisions made were newborn, pup of year, immature and adult which were equaled to pup, yearling, subadult, and adult of this Table.

<sup>11</sup> Animals were listed as immatures (judging from context this seems to be most equivalent to tern yearlings).

<sup>12</sup> Count figures are stated in terms of adults, subadults, and pups while tagging figures are stated in terms of subadults, yearlings, and pups.

<sup>13</sup> That this count is markedly low does not indicate an incompetent count but rather is likely the result of having been taken late in the survey period (5th day of survey). Contrast with June 1966 count taken on first day of survey. A good example of the effect of disturbance on population counts (and even if disturbance is unintentional and undesirable from the point of view of the survey party).

<sup>14</sup> Listed as juveniles (= yearlings?) in report. Count total includes 20 unaged animals.

<sup>15</sup> Count includes 29 unaged seals. Pup percentages for both 2 June and 26 March 1969 are thus probably inflated as count of pups was probably complete - 2nd percentage figure listed in these two instances is of total count.

<sup>16</sup> Total includes both subadults and yearlings



Reverse Dates  
as usual

TABLE Sex-ratios observed in different age-groups of Hawaiian Monk Seals on Lisianski Island

Date of survey	ADULTS					SUB-ADULTS / YEARLINGS					PUPS				
	No. sexed	# of ♂♂	% ♂♂	# of ♀♀	% ♀♀	No. sexed	# of ♂♂	% ♂♂	# of ♀♀	% ♀♀	No. sexed	# of ♂♂	% ♂♂	# of ♀♀	% ♀♀
<del>May 13 1961</del>															
(Mar. 9) 1961	31	11	35.5	20	64.5	14	7	50.0	7	50.0	--	--	----	--	----
(Mar. 12) 1964	84	31	36.9	53	63.1	32	22	68.8	10	31.3	--	--	----	--	----
(Sept. 18) 1964	63	43	68.3	20	31.7	26	11	42.3	15	57.9	--	--	----	--	----
(June 19) 1966	67	37	55.2	30	44.8	16	10	62.5	6	37.5	33	14	42.4	19	57.6
(Sept. 19) 1966	90	63	70.0	27	30.0	16	8	50.0	8	50.0	15	8	53.3	7	46.7
(Oct. 18) 1966	69	50	72.5	19	27.5	18	9	50.0	9	50.0	9	5	55.6	4	44.4
(Mar. 20) 1967 <sup>2</sup>	94	54	57.4	40	42.6	23 <sup>3</sup>	10	50.0	13	50.0	10	5	50.0	5	50.0
(June 6) 1967	79	37	46.8	42	43.2	25	12	48.0	13	52.0	11	4	36.4	7	63.6
(25 Sept) 1967 <sup>3</sup>	59	33	55.9	26	44.1	19	8	42.1	11	57.9	--	--	----	--	----
1968 20 March	66	45	68.2	21	31.8	46	24	52.1	22	47.9	10	6	60.0	4	40.0
1969 30 March	81	47	58.0	34	42.0	15	6	40.0	9	60.0	18	8	44.4	10	55.6
1969 4 June <sup>4</sup>	?	?	?	?	?	?	?	?	?	?	21	7	33.3	14	66.7
<hr/>															
				34		15	6		9		18	8		10	
(14 Feb.) 1963 <sup>1</sup>	12	8	66.7	4	33.3	20	16	80.0	4	20.0	1	1	100.0	0	0.0
<hr/>															
Overall ratios	795	459	57.7	336	42.3	270	143	53.0	127	47.0	128	58	45.3	70	54.7

1. Breakdown includes 7 animals assessed as yearlings males and 8 as yearling females. Table includes Category

- 1 & 2. Figures given in this line are sex ratios of animals tagged
- 4 & 2. Figures given are from tagging data in BSFW report. Sex ratios for old seals older than pups may be available but were not given in report received by the PABSP
- 2 & 3. Figures for pups are from tagging data are maxima from a combination of count + tagging data
- 3 & 4. Figures are maxima from a combination of count + tagging data



DATA ON TAG RETURNS OF HAWAIIAN MONK SEALS FROM

March  
April  
1969

Yellow Plastic Tag	Return Data			Tagging Data		
	Tag No.	Date Seen	A-S	Island	Date tagged	Age
	A625	Same	825	Laysan	26 Mar. 69	2 years
	A479*		None	F hay		
	A480					B.P. weaned
	A481			M		
	A482			F		
	A483			M		
	A484					B.P. c. 4 days
	A485					B.P. 2 weeks
	A486			F		10 days
	A487			M		2 days
	A488					2 weeks
	A489					2 days
	A490					G.P. weaned, no mother
	A491					B.P. c. 1 week
	A492			F		B.P. c. 5 weeks
	A626		826	M	Laysan 30 Mar. 1969	1-2 yr.
	A627		827	F F		B.P. c. 3 weeks
	A628		828			newborn, umbilical present
	A629		829	M M		G.P. newly weaned, no mother
	A630					with mother
	A631		830	M		B.P. ca. 1 week
	A632		831	F F		
	A633		832			
	A634		833			
	A635		834	M M		
	A636		835			

\* A478 lost in sand (metal tag)



~~GIUOG~~  
DATA ON TAG RETURNS OF HAWAIIAN MONK SEALS FROM -----

March -  
April  
1969

Tagging

Return Data

Tagging Data

Yellow Plastic Tag	Metal Tag No.	Other Tag No. Date Seen	A-S	Island Island	Date Tagged Date tagged	Age	A-S	Island
A637	Same	837	F	Lisianski	30 Mar. 1969	G.P. near weaning, ca. 6 weeks, wt. 155 lbs		
Nave	638	838	I			I weaned, no mother		
A639	Same	839	M			BP c. 4-5 weeks		
A641	I	841	I			Yrl.		
800	A640	840	F					
A642	Same	842	M					
A643	I	843	F			BP newborn		



Table .(cont.)

<u>Dates of Survey</u>	<u>Population Estimate</u>	<u>Breeding Status, Remarks and References</u>
1963 14 Feb.	144	Counted. Total includes 3 pups, one of which was dead (POBSP).
12-13 Mar.	210	Count of 82 adults and subadults and 13 pups (2 dead) on 12 March (POBSP).
1964 11-13 Mar.	180	Counted on 12 March. Total includes 7 pups (BSFW).
21-23 Aug.	144	Counted on 21 August. Total includes 1 pup (POBSP).
18 Sept.	121	Count includes 33 yearlings (BSFW).
1965 12-14 Mar.	187	Counted on 12 March. Total includes 15 pups and 1 dead adult (POBSP).
14-17 July	161	Counted on 14 July (POBSP).
1966 16-19 June	157	Counted on 19 June. Total includes 33 yearlings and 3 pups (POBSP).
19 Sept.	139	Count includes 17 pups (BSFW).
18-20 Oct.	111	Counted on 18 October. Total includes 9 pups. An unspecified number of yearling seals were also present (POBSP).
1967 20 Mar.	139	Count includes 10 pups and 17 yearlings (BSFW).
2-6 June	128	Counted on 6 June. Total includes 12 pups and 11 yearlings (POBSP).
31 Aug.-	141	Counted on 2 Sept. Total includes 10 pups (POBSP).
5 Sept.		
25-26 Sept.	181	Counted on 25 Sept. Total includes 28 yearlings (BSFW) .



Table . (cont.)

<u>Dates of Survey</u>	<u>Population Estimate</u>	<u>Breeding Status, Remarks and References</u>
1968 20-21 Mar.	123	Counted on 20 March. Total includes 10 pups and 19 yearlings (BSFW).
1969 30 Mar.	130	Count includes 18 pups and 17 juveniles [= yearlings] (BSFW). Twelve of pups born recently (Laycock, 1970: 59).
4 June	127	Count includes 26 pups and 2 yearlings (BSFW).

\* Table does not include several mentions of seals on Lisianski in the 1880's that add nothing to our knowledge other than the fact that they occurred there.

\*\* Seals aged as yearlings in March are young from the preceeding breeding season, while many, if not most, of those aged as yearlings on summer and fall surveys are young born that year.



Wintz's summary of his seal-tagging records \*

Feb-Mar. 1963

✓ 1	subadult ♀	1600	27 Feb. 1963	PH, Southeast, E end of base line
✓ 2	subadult u	1600	11 Feb. 1963	Laysan, N of boat landing on W side
✓ 3	subadult ♂	1610	"	Laysan, "
✓ 4	subadult ♂	1615	"	Laysan, "
✓ 5	adult ♀	1535	12 Feb. 1963	Laysan, "
✓ 6	subadult ♀	1625	11 Feb. 1963	Laysan, "
✓ 7	subadult u	1635	"	Laysan, "
✓ 8	subadult ♂	1010	12 Feb. 1963	Laysan, S of boat landing on W side
✓ 9	adult ♀	1606	27 Feb. 1963	PH, Southeast, eastern edge of ponds
✓ 10	subadult ♀	1545	12 Feb. 1963	Laysan, N of boat landing on W side
✓ 11	pup ♂	1030	"	Laysan, S of boat landing on W side
✓ 12	adult ♂	1600	27 Feb. 1963	PH, Southeast, E end of ponds

Ray: Summ:

	♂	♀	?	
A	5	5	0	10
S	8	6	2	16
P	1	0	0	1

✓ 13	subadult ♂	1035	12 Feb. 1963	Laysan, S of boat landing on W side
✓ 14	subadult ♀	1043	"	Laysan, "
✓ 15	subadult ♀	1050	"	Laysan, "
✓ 16	adult ♀	1100	"	Laysan, "
✓ 17	adult ♀	1110	"	Laysan, "
✓ 18	subadult ♂	1130	"	Laysan, "
✓ 19	subadult ♂	1135	"	Laysan, "
✓ 20	subadult ♀	1140	"	Laysan, "
✓ 21	adult ♂	1550	"	Laysan, N of boat landing on W side
✓ 22	adult ♀	1600	"	Laysan, "
✓ 23	adult ♀	1610	"	Laysan, "
✓ 24	adult ♂	1615	"	Laysan, "

\* As far as I can tell everything Wintz called yearling in his original notes is listed as subadult here (RBC) my comments in ink in margins



25	(put on no. 24 also, former tag cracked)				
✓ 26	adult	♂	1620	12 Feb. 1963	Laysan, N of boat landing on W side
✓ 27	subadult	♂	1645	"	Laysan, "
✓ 28	adult	♂	1710	"	Laysan, sand beach NW corner
✓ 29	adult	♂	1715	"	Laysan, "
✓ 30	subadult	♀	1725	"	Laysan, "
✓ 31	subadult	♂	1735	"	Laysan, "
✓ 32	subadult	♂	1115	14 Feb. 1963	Lisianski, east side
✓ 33	adult	♀	1130	"	Lisianski, E side above rocks
✓ 34	subadult	♂	1135	"	Lisianski, "
✓ 35	adult	u	1140	"	Lisianski, "
✓ 36	adult	u	1145	"	Lisianski, rock ledge on E side

✓ 37	adult	u	1147	14 Feb. 1963	Lisianski, rock ledge on E side
✓ 38	adult	♀	1205	"	Lisianski, S of rock ledge
	(only male part of tag applied)				
✓ 39	subadult	♂	1207	"	Lisianski, sandy beach SE corner
→ ✓ 40	subadult	♂	1210	"	Lisianski, "
✓ 41	subadult	♂	1420	"	Lisianski, SW corner of west side
✓ 42	adult	♀	1425	"	Lisianski, beach near SW corner
✓ 43	adult	♂	1437	"	Lisianski, "
✓ 44	subadult	♂	1440	"	Lisianski, small boat landing W side
✓ 45	subadult	♀	1450	"	Lisianski, "
✓ 46	adult	♂	1455	"	Lisianski, west side in grass
✓ 47	adult	♂	1500	"	Lisianski, W side on beach N of boat landing
✓ 48	subadult	♂	1520	"	Lisianski, W side 300 yds. N of boat landing

OK in notes  
but not in  
own summary



✓ 49	subadult	♂	1522	14 Feb. 1963	Lisianski, W side 300 yds. N of boat landing
✓ 50	subadult	♂	1525	"	Lisianski, 10 yds. into <u>Scaevola</u> from above
✓ 51	adult	♀	1220	"	Lisianski, sand beach SE side (with sm. pup)
✓ 52	pup	♂	1220	"	Lisianski, with ♀ above
✓ 53	subadult	u	1225	"	Lisianski, SE side
✓ 54	subadult	♀	1230	"	Lisianski, sand beach SE corner
55	broken				
✓ 56	subadult	♂	1255	"	Lisianski, "
✓ 57	yearling	♂	1530	"	Lisianski, beach on NW corner (60-75 lbs)
✓ 58	adult	♂	1300	"	Lisianski, SE corner
✓ 59	subadult	♂	1305	"	Lisianski, "
60					

✓ 61	subadult	♂	1310	14 Feb. 1963	Lisianski, large sandy pt. SE corner
✓ 62	subadult	♂	1315	"	Lisianski, "
✓ 63	subadult	♂	1317	"	Lisianski, "
✓ 64	subadult	♀	1325	"	Lisianski, "
✓ 65	adult	♂	1327	"	Lisianski, "
✓ 66	adult	♂	1330	"	Lisianski, W edge SE corner pt.
✓ 67	subadult	♂	1335	"	Lisianski, <u>Scaevola</u> back of SE pt.
✓ 68	subadult	♀	1338	"	Lisianski, W pt. of SE corner
✓ 69	adult	♂	1610	27 Feb. 1963	PH, Southeast, East Pt.
✓ 70	adult	♂	1617	"	PH, Southeast, East Pt.
✓ 71	adult	♂	1620	"	PH, Southeast, East Pt.
✓ 72	subadult	♀	1625	"	PH, Southeast, E shore of lagoon

his-Totals

	♂	♀	?
Ad.	8	4	3
Sub/yr	16	4	1
Pup	1	0	0
	23	8	4



✓ 73	adult	♀	1635	27 Feb. 1963	PH, Southeast, W shore of lagoon near base of peninsula
✓ 74	subadult	♂	1637	"	PH, "
75	broken				
✓ 76	yearling	♀	1639	"	PH, "
✓ 77	adult	♀	1641	"	PH, "
✓ 78	subadult	♂	1645	"	PH, "
79					
✓ 80	adult	♀	1500	28 Feb. 1963	PH, Southeast, South Beach
✓ 81	subadult	♀	1510	"	PH, Southeast, East Pt.
✓ 82	adult	♀	1517	"	PH, Southeast, NE Beach
✓ 83	adult	♂	1530	"	PH, Southeast, North Beach
✓ 84	adult	u	1540	"	PH, Southeast, W end Sand Spit

✓ 85	subadult	♂	1545	28 Feb. 1963	PH, Southeast, NW Beach
✓ 86	adult	♀?	1555	"	PH, Southeast, SW Beach
✓ 87	subadult	♂	1600	"	PH, "
✓ 88	adult	♀	1605	"	PH, Southeast, Cove
89	broken				
✓ 90	adult	♀	1630	"	PH, Southeast, NW corner of lagoon
✓ 91	adult	♀	1645	"	PH, Southeast, E side of lagoon (orange)
✓ 92	subadult	♀	1645	"	PH, " (orange)
✓ 93	adult	♀	1615	"	PH, Southeast, E end Rock Flats (orange)
✓ 94	adult	♂	1135	2 Mar. 1963	PH, Southeast, NE Beach
✓ 95	adult	♂	1136	"	PH, Southeast, East Pt.
✓ 96	subadult	♀	1140	"	PH, Southeast, NE Beach ( 3 purple spots)



✓ 97	yearling	♂	1141	2 Mar. 1963	PH, Southeast, East Point
✓ 98	subadult	♂	1145	"	PH, Southeast, E end of ponds
✓ 99	subadult	♂	1146	"	PH, "
✓ 100	subadult	♂	1148	"	PH, "
✓ 101	adult	♀	1205	"	PH, Southeast, North Pt.
✓ 102	adult	♂	1215	"	PH, Southeast, North Beach
✓ 103	adult	♂	1220	"	PH, Southeast, North Beach
✓ 104	yearling	♂	1225	"	PH, Southeast, E end of Sand Spit
✓ 105	subadult	♀	1230	"	PH, Southeast, W end of Sand Spit
✓ 106	adult	♂	1237	"	PH, Southeast, NW Beach
✓ 107	subadult	♀	1243	"	PH, Southeast, SW Beach
✓ 108	subadult	♀	1246	"	PH, Southeast, Cove

✓ 109	subadult	♂	1248	2 Mar. 1963	PH, Southeast, Cove
✓ 110	yearling	♀	1255	"	PH, Southeast, Rock Ledge
✓ 111	yearling	♀	1315	"	PH, Southeast, Rock Ledge near Cove
✓ 112	yearling	♀	1320	"	PH, Southeast, E end Rock Ledge
✓ 113	adult	♀	1700	"	PH, Southeast, South Beach
✓ 114	adult	♀	1405	4 Mar. 1963	PH, "
✓ 115	adult	♂	1415	"	PH, Southeast, Southeast Beach
✓ 116	adult	♂	1418	"	PH, Southeast, East Beach
✓ 117	adult	✓	1420	"	PH, Southeast, East Pt.
✓ 118	adult	♂	1422	"	PH, "
✓ 119	subadult	♂	1430	"	PH, Southeast, between E and C ponds



✓ 121	adult	♀	1435	4 Mar. 1963	PH, Southeast, North Pt.
✓ 122	adult	♀	1440	"	PH, Southeast, North Beach
✓ 123	subadult	♂	1455	"	PH, Southeast, W shore of lagoon
✓ 124	adult	♀	1505	"	PH, Southeast, E end Rock Ledge
✓ 125	yearling	♀	1515	"	PH, Southeast, SW Beach near Cove
✓ 126	yearling	♂	1520	"	PH, "
✓ 127	adult	♀	1800	"	PH, Southeast, Tank Ledge
✓ 128	yearling	♂	0950	5 Mar. 1963	PH, Bird Island
✓ 129	adult	♂	0950	"	PH, "
✓ 130	adult	♂	0950	"	PH, "
✓ 131	adult	✓	1015	"	PH, Sand Island
✓ 132	adult	♀	1200	"	PH, Grass, E end in vegetation

✓ 133	adult	♀	1205	5 Mar. 1963	PH, Grass, E end in vegetation
✓ 134	adult	♀	1210	"	PH, "
✓ 135	yearling	♀	1215	"	PH, Grass, north beach, E end of vegetation
✓ 136	adult	♀	1220	"	PH, Grass, south beach
✓ 137	yearling	♂	1220	"	PH, "
138					
139					
140					
✓ 141	adult	♂	1225	5 Mar. 1963	PH, Grass, south beach
✓ 142	adult	♀	1230	"	PH, Grass, south beach in vegetation
✓ 143	adult	♀	1230	"	PH, Grass, south beach
✓ 144	adult	♀	1235	"	PH, "



✓ 145	yearling	♀	1240	5 Mar. 1963	PH, Grass, south beach
✓ 146	adult	♂	1240	"	PH, "
✓ 147	adult	♂	1245	"	PH, Grass, southwest sand point
✓ 148	adult	♂	1245	"	PH, "
✓ 149	adult	♂	1250	"	PH, "
✓ 150	adult	♀	1250	"	PH, "
✓ 151	adult	♂	1400	"	PH, Kittery, center of NE leg
✓ 152	adult	♂	1400	"	PH, "
✓ 153	adult	♂	1410	"	PH, Kittery, E beach of NE pt.
✓ 154	adult	♀	1410	"	PH, Kittery, east side on cove
155					
✓ 156	adult	♂	1410	5 Mar. 1963	PH, Kittery, E side on cove

✓ 157	adult	♀?	1415	5 Mar. 1963	PH, Kittery, southern pt.
✓ 158	adult	♂	1415	"	PH, "
159	broken				
✓ 160	yearling	♀	1425	"	PH, Kittery, northwest pt.
✓ 161	yearling	♀	1425	"	PH, "
✓ 162	yearling	♂	1430	"	PH, "
✓ 163	yearling	♀	1500	"	PH, Seal, south beach below vegetation
✓ 164	subadult	♀	1510	"	PH, Seal, north beach above vegetation
✓ 165	yearling	♀	1555	6 Mar. 1963	PH, Southeast, East Pt.
✓ 166	adult	♂	1603	"	PH, Southeast, E end of ponds
✓ 167	yearling	♀	1615	"	PH, Southeast, North Beach
✓ 168	adult	♀	1640	"	PH, Southeast, Southwest Beach



DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM -----

Sept. \*  
1966

Tagging

Return Data

Tagging Data

Tag. No.	<sup>Tagged</sup> Date Seen	A-S	Island	Date tagged	A-S	Island
503	12 Sept.	A-F	Trig, F.F.S.			
	13 Sept.		Whale-Skate, FFS			
	13 Sept					
506	13 Sept	P-M				
	13 Sept					
	13 Sept					
509	13 Sept	P-M	East, F.F.S.			(late pup)
	13 Sept					

\* Data, where available, is from Knidler's notes & reports.



Sept. 1966

DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM -----

Tagging  
Return Data

Tagging Data

Tag. No.	Date Tagged	A-S	Island	Date tagged	A-S	Island
----------	-------------	-----	--------	-------------	-----	--------

17-18 Sept.

Laysan

↑  
leave space for 11 entries  
↓

19 Sept

Kisianski

A 529

S-M

A 633

P-F

~~529~~

20 Sept.

A-F Grass, P+H

21 Sept.

P- Seal, P+H

21 Sept.

P

21 Sept.

P

21 Sept.

P

21 Sept.

Kittery, P+H

21 Sept.

21 Sept.

21 Sept.

21 Sept.

21 Sept.

Southeast, P+H  
Planetree

\* Knidler notes available to POBSP do not give tagging data. Notes state that 11 seals were tagged on Laysan; 15, 9 of which were pups, were tagged on Kisianski. For Pearl & Hermes notes do not state whether any seals were tagged on Southeast, 20 Sept.

\*\* Specifics of tagging not given in notes but 2 of pups, males, 2 females

\*\*\* All other seals are either adults or subadults



DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM

Sept.  
1966

Tagger

Return Data

Tagging Data

Tag. No.	Date Tagged	A-S	Island	Date tagged	A-S	Island
546	20 Sept		Southeast P+H			
	21 Sept		Southeast, P+H			

22 Sept.

North, P+H.

22 Sept

22 Sept.

22 Sept.

22 Sept.

22 Sept.

22 Sept

565 22 Sept.

Little North, P+H

567 22 Sept.

Southeast, P+H

23 Sept.

Southeast, P+H

573 24 Sept.

584 24 Sept.

588 24 Sept.

591 24 Sept

\* No tagged on 21, Sept. not given in Knicker notes.  
22, and 23



DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM

March  
1967 \*

Tagging  
Return Data

Tagging Data

Tag. No.	Date Seen	A-S	Island	Date tagged	A-S	Island	Comments
A-1	11 March 12	P-M	East, F.F.S. **				
A-2	11 March 11	P-M					
A-3	11 March 11	P-F					
A-4	11 March 11	Yr-F					
A-5	11 March 11	Yr-F					Moulting Not moulting
A-6	March 11	P-F					
A-7	March 11	P-F					Wet, eyes closed, umbilical cord
A-8	March 13	P-F	Trig, F.F.S.				
A-9		P-M					
A-10		P-F					
A-11		Yr-M					
A-12		Yr-F					with Smithsonian # 72, not moulting...
A-13		Yr-M					
A-14		P-U					
A-15		P-F					
A-16		P-F					
A-17		P-M					gray pup
A-18		P-U					

March 14

Whale-Skate \*

A-20

P

\* Data where available, from Knicker refuge log-book (There may well be some errors or omissions as I don't know what data I may have lacked etc)  
 \*\* All pups & yearlings tagged at East subsequently  
 \* logbook says nine tagged & 1 recovered



GING  
DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM -----

March  
1967

Taggy  
Return Data

Tagging Data

Tag. No.	Date Tagged Seen	A-S	Island	Comments Date-tagged	A-S	Island
A-31	March 12-89 <del>18-19-89</del> 19	P-F	Laysan	umbilical present, afterbirth alongside, newborn		
A-32		M		black pelage		
A-33		F		- large		
A-34		M		- small		
A-35		F		(36") umbilical attached		
A-36		Yr M		not moulted		
A-37		P-M		black pelage	Small (40")	
A-38		F				
A-39		M			large (48")	
A-40		Yr-F		moulted		
A-41		M		not moulted - brown		
A-42		F		- thin		
A-43		P-F		black pelage - newly born (30")		
A-44		Yr-F		not moulted - brown		
A-45		Yr-F				
A-46		P-M		black pelage - small (36")		
A-47		Yr-M		not moulted		
A-48				moulted		
A-49						
A-50				moulted (early pup?)		
A-51				not moulted		
A-52		S-F				
A-53		P-M		black pelage, small (36")		
A-54		S-F	<del>not moulted</del>	not moulted		
A-55		P-F		black pelage, large (45")		
A-56		M		gray	Pat + large (55")	
A-57		F				
A-58		M		black pelage		
A-59		F			small (40")	
A-60		M			large (48")	
A-61		F			small (36")	
A-62		M			large Pat. (48")	
A-63		F			small (40")	



3. GING  
DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM -----

March  
1967

Tagging  
Return Data

Tagging Data

Tag. No.	Date Seen	A-S	Island	Comments	Date tagged	A-S	Island
A 64	Mar. 20?	Yr F	Laysan	Not moulted, brown			
A 65		M					
A 66		M					
A 67		P F		Black			
A 68		S F		Not moulted, brown			
A 69		P M		Black 48"			
A 70		P M		42"			
A 71		Yr F		not moulted, brown w/ green algae			
A 72		M					
A 73		M					
A 74		F					
A 75		F					
A 76		P F		black, Fat			
A 77		M					
A 78		F		44"			
A 79				(by itself)			
A 80							
A 81		P M					
A 82		Yr F		not moulted, brown			
A 83		M					
A 84		F					
A 85		F					
A 86		U					
A 87		F					
A 88		M					
A 89		S F					
A 90		P M		black, newly born			
A 91	Mar 21(?)	Yr. M	Southeast, P-H	not moulted			
A 92		F					
A 93							
A 94							
A 95							
A 96		S F					
A 97							



March

1967

DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM -----

Tagging  
Return Data

Tagging Data

Tag. No.	Date <sup>Tagged</sup> Seen	A-S	Island	Date <sup>Commals</sup> tagged	A-S	Island
A 98	Mar. 22	S-F	Grass, P+H	moulted		
A 99		P-F	Seal, P+H			
A 100		S-F	Kittery, P+H			
A 101		Yr-M				



## Seal Island Pearl and Hermes Reef -- May 28, 1967

A 102	pup-female	(black pelage)
A 103	pup-male	"
A 104	pup-male	"
A 105	pup-female	"
A 106	pup-female	"

## Lisianski Island -- June 6, 1967

A 107	pup-male	(black pelage)
A 108	pup-female	"
A 109	pup-female	"
A 110	pup-male	" *
A 111	pup-female	"
A 112	pup-male	" *
A 113	pup-female	"

## Laysan Island -- June 10, 1967

A 114	pup-male	(black pelage)	*
A 115	pup-female	"	
A 116	pup-male	"	
A 117	"	"	
A 118	"	"	
A 119	"	"	
A 120	"	"	
A 121	"	"	
A 122	"	"	
A 123	"	"	
A 124	"	"	
A 125	"	(silver pup)	

\* Unaccompanied by female, all other pups were accompanied by females.



DATA ON TAG RETURNS OF HAWAIIAN MONK SEALS FROM

July  
1967\*

Tagging  
Return Data

Tagging Data

Tag No.	Date Seen	A-S	Island	Date tagged	A-S	Island
A 126	July 3	S	Southeast, P+H			
A 131	July 3		Southeast, P+H			
A 137	July 6		Southeast, P+H			
A 139	July 6		Southeast, P+H			
A 140	1	yr	1			
A 141	July 7		Southeast, P+H			
A 142	July 6	S				
A 145	July 7		Southeast, P+H			
A 148	July 7		Southeast, P+H			
A 152	July 7	A-F	Seal Southeast, P+H			
A 156	July 7		Seal, P+H			
A 159	July 7		Seal, P+H			
A 169	July 9	A-F	Kittery, P+H			
A 173	July 9	P	Grass, P+H			
A 179	July 7		Seal, P+H			
A 180	July 10		Seal, P+H			

\* Seals were tagged during Kniddle's July 1967 visit to Pearl and Hermes but the PCBSP has no report of this visit. Partial information on seal tagging above is assembled from return data given in subsequent reports



DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM -----

Sept. \*  
1967

Tagging  
Return Data

Tagging Data

Tag.  
No.

Date Seen

A-S

Island

Comments  
Date tagged

A-S

Island

A 205 Sept. 17, 1967 Yr-F Whole-Stroke, FFS

A 206 S-M

molted

A 207 Yr-M

no not molted

A 208 Yr-F

A 209 S-U

A 210 Yr-M

A 211 Yr-F

A 212 Yr-F

A 213 Yr-F

A 214 Yr-F

molted

A 215 S-F East, FFS

not molted

A 216 Yr-M

A 217 A-F

molted

A 183 Sept 21, 1967 A-M Laysan

A 184 10ST

A 185 S-F

A 186 S-F

A 187 Yr-M

Retagging of A 119, tagged as male black pup by PABSP June 10, 1967

A 188 S-F

A 189 Yr-M

A 190 Yr-M

A 191 Yr-F

A 192 Yr-F

not molted

A 193 Yr-F

molted

A 194 A-F

A 195 Yr-M

A 196 Yr-F

A 197 Yr-F

molted

A 198 S-F

\* Data, where available, in part from Knoller notes (Nihoa thru FFS), in part from refuge logbook (Laysan - up chain)

+ Retagging of A 119 tagged as male, black pup by PABSP June 10, 1967



DATA ON TAG RETURNS OF HAWAIIAN MONK SEALS FROM -----

Sept.  
1967

Tagging  
Return Data

Tagging Data

Tag No.	Date Seen	A-S	Island	Date tagged	A-S	Island
---------	-----------	-----	--------	-------------	-----	--------

A-199	Sept 21	S-M	Laysan			
-------	---------	-----	--------	--	--	--

A-200		Yr. M				
-------	--	-------	--	--	--	--

A-220		Yr. M				
-------	--	-------	--	--	--	--

A-221		Yr. M				
-------	--	-------	--	--	--	--

A-222		Yr. M				
-------	--	-------	--	--	--	--

A-223		Yr. F				
-------	--	-------	--	--	--	--

A-224		Yr M				
-------	--	------	--	--	--	--

A-225		Yr M				
-------	--	------	--	--	--	--

A-226	Sept 25	A M	Laysan			
-------	---------	-----	--------	--	--	--

A-227		A F				
-------	--	-----	--	--	--	--

A-228		Yr. M				
-------	--	-------	--	--	--	--

A-229		F				
-------	--	---	--	--	--	--

A-230		M				
-------	--	---	--	--	--	--

A-231		A F				
-------	--	-----	--	--	--	--

A-232		F				
-------	--	---	--	--	--	--

A-233		M				
-------	--	---	--	--	--	--

A-234		Yr M				
-------	--	------	--	--	--	--

A-235		Yr M				
-------	--	------	--	--	--	--

A-236		A M				
-------	--	-----	--	--	--	--

A-237		Y F				
-------	--	-----	--	--	--	--

A-238		Y F				
-------	--	-----	--	--	--	--

A-239		Y M				
-------	--	-----	--	--	--	--

A-240		Y F				
-------	--	-----	--	--	--	--

A-241		Y F				
-------	--	-----	--	--	--	--

A-242		S U				
-------	--	-----	--	--	--	--

A-243		Y F				
-------	--	-----	--	--	--	--

A-244		A F				
-------	--	-----	--	--	--	--

A-245	Sept 26	Y M				
-------	---------	-----	--	--	--	--

A-276	Sept 27	Y F				
-------	---------	-----	--	--	--	--

A-277		A F				
-------	--	-----	--	--	--	--

A-278		Yr M				
-------	--	------	--	--	--	--

A-248		Yr F				
-------	--	------	--	--	--	--

A-249		Yr F				
-------	--	------	--	--	--	--

A-250		Yr F				
-------	--	------	--	--	--	--

A-279		A-F				
-------	--	-----	--	--	--	--

A-280	DESTROYED					
-------	-----------	--	--	--	--	--

A-281		Yr F				
-------	--	------	--	--	--	--

A-282	LOST					
-------	------	--	--	--	--	--

A-283		Yr F				
-------	--	------	--	--	--	--

A-284		S F				
-------	--	-----	--	--	--	--

moulting

molting

North, P+H

Little North, P+H

moulted

molting

not moulted

moulted



DATA ON TAG RETURNS OF HAWAIIAN MONK SEALS FROM -----

Sept.  
1967

Tagging  
Return Data

Tagging Data

Tag. No.	<sup>Tagged</sup> Date Seen	A-S	Island	<sup>Comments</sup> Date tagged	A-S	Island
A 285	Sept. 28	Yr. U	Southeast, P+H			
A 286		A-F	Grass, P+H	moulting		
A 287		A-F	I			
A 288		A-F	Kittery, P+H			
A 289		A-U				
A 290		A-M				
A 291	LOST & DESTROYED		P+H			
A 292		A-F	Seal, P+H	moulting		
A 293	TAG DESTROYED					
A 294		A-M				



DATA ON TAG RETURNS OF HAWAIIAN MONK SEALS FROM

March  
1968

Tagging  
Return Data

Tagging Data

Tag. No.	Date Seen	A-S	Island	Date tagged	A-S	Island
A 203	Mar 17-19	S-F	Laysan			
A 251		P-F				
A 252		Y-F				
A 253		P-F				
A 254		Yr F				
A 255		M				
A 256		F				
A 257		S F				
A 258		Yr M				
A 259		F				
A 260		M				
A 261		S F				
A 262		Yr F				
A 263		M				
A 264		M				
A 265		S M				
A 266		Yr F				
A 267		M				
A 268		F				
A 269		M				
A 270		P M				
A 271		Yr M				
A 272		P M				
A 273		P F				
A 274		P F				
A 275		Yr M				
A 298	Mar 18	P F				
A 299	Mar 17-19	S F				
A 300		S F				
A 301		Yr M				
A 302		P M				
A 303		M				
A 304		F				
A 305		F				
A 306		M				
A 307		M				

group pup

\* Data in Clapp PCBSP report that was obtained in the field  
from E. Kridler, et al.

Yellow streamers added to tags



March  
1968

DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM

Tagging  
Return Data

Tagging Data

Tag. No.	Date Seen	A-S	Island	Date tagged	A-S	Island
A 308*	Mar. 20	Yr M	hisianski			
A 309		I F				
A 310		P M				gray pup
A 311		Yr M				
A 312		I F				
A 313		I M				
A 314		I M				
A 315		P M				
A 316		I F				
A 317		I F				
A 318		I F				
A 319		<del>I</del> F				
A 320		I M				
A 321		P <del>Yr</del> M				
A 326		Yr M <del>Yr</del> F				
A 327		Yr F <del>P</del> M				
A 328		P-M <del>P</del> F				
A 329		P-F <del>Yr</del> M				
A 330		Yr M				
A 331	Mar. 21	Yr F				
A 332		P M				
A 333		Yr F				
A 334		Yr M				
A 335		Yr M				
A 336	Mar 22	Yr M	Southeast, P+H			
A 337		Yr M				
A 338		Yr F				
A 339		Yr M				
A 340	Mar 24	S M	Grass, P+H			
A 341		P-F	Seal, P+H			
A 342		P-F				
A 343		Yr F				

\* gray streamers affixed to tags of hisianski seals  
 white " " " " " P+H seals



DATA ON TAG RETURNS OF HAWAIIAN MONK SEALS FROM -----

Sept.  
1968

Tagging  
Return Data

Tagging Data

Tag.  
No.

Date Seen

Tagged

A-S

Island

Comments

Date tagged

A-S

Island

Laysan

A 376 Sept 5, 1968 P

A 379 Sept. 1968

A 385

A 393

A 395

\* PABSP has no report from Laysan. Knudsen has data



DATA ON TAG RETURNS OF HAWAIIAN MONK SEALS FROM -----

Feb.  
1969 \*

Tagging  
Return Data

Tagging Data

Tag. No.	Date Seen	A-S	Island	Date tagged	A-S	Island
A 363	Feb 10, RR	yr M	Southwest, P+H			
A 364		F				
A 365		F				
A 366		F				
A 367		F				
A 368		M				
A 369		F				
A 370	Feb 11	M				
A 371		F				

\* Data from Kröller report. Only Pearl & Hermes visited  
 \*\* All seals tagged with a metal and a yellow plastic tag



DATA ON TAG RETURNS OF HAWAIIAN MONK SEALS FROM

don't type in as

you always have this on

MARCH  
April  
1969

Tagger Data

Return Data

Tagging Data

Yellow Plastic Tag	metal Tag. No. **	Other Tag *** Date Seen	A-S	Island	Date Tagged	Cold-Brand Mark Date tagged	Age A-S	Island
A602	Same	802	F	Laysan	26 Mar. 1969	L - F	B.P.	1 week
A603		803	M			L - A	B.P.	newborn
A604		804				L - 7	B.P.	2 weeks
A605		805				L - >	B.P.	newborn
A606		806	F			L - L	G.P.	weaned, no mother
A607		807				L - V	"	" "
A608		808	M				B.P.	newborn
A609		809	F				G.P.	4 weeks
A610		810	M				G.P.	weaned, no mother
A611		811					B.P.	newborn
A612		812	F				B.P.	3 weeks
A613		813						
None	A614	814					B.P.	newborn
A615	same	815					G.P.	weaned, no mother
A616		816						
A617		817	M				Yrl.	
A618		818	F					
A619		819						
A620		820					B.P.	newborn
A621		821					Yrl	
A622		822	M			Done		
A623		823						
A624		824	F					

\* Data from Knicker Report

\*\* On left rear flipper

\*\*\* On right rear flipper



DATA ON TAG RETURNS OF HAWAIIAN MONK SEALS FROM -----

March  
April  
1969

Tagger Return Data	Tagging Data						
metal Tag. No.	Original Tag No.	Date Seen	A-S	Island	Date Tagged	Age	Island
Yellow Plastic Tag							
A 625	Same	825	M	Laysan	26 Mar. 69	2 years	
A 479*				None of hay			
A 480						B.P. Neonatal	
A 481			M				
A 482			F				
A 483			M				
A 484						B.P. c. 4 days	
A 485						B.P. 2 weeks	
A 486			F			10 days	
A 487			M			2 days	
A 488						2 weeks	
A 489						2 days	
A 490						G.P. weaned, no mother	
A 491						B.P. c. 1 week	
A 492			F			B.P. c. 5 weeks	
A 626		826	M	Laysan	30 Mar. 1969	1-2 yr.	
A 627		827	F F			B.P. c. 3 weeks	
A 628		828				newborn, umbilical present	
A 629		829	M M			G.P. newly weaned, no mother	
A 630						with mother	
A 631		830	M			B.P. ca. 1 week	
A 632		831	F F				
A 633		832					
A 634		833					
A 635		834	M M				
A 636		835					

\* A 478 lost in sand (metal tag)



GIING  
DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM -----

March -  
April  
1969

Tagging

Return Data

Tagging Data

Yellow Plastic Tag	Metal Tag No.	Other Tag No Date Seen	A-S	Island Island	Date Tagged	Age	A-S	Island
A637	Same	837	F	Lisianski	30 Mar. 1969	G.P. near weaning, ca. 6 weeks, wt. 155 lbs		
Nare	638	838	I			I weaned, no mother		
A639	Same	839	M			BP c. 4-5 weeks		
A641	I	841	I			Ynl.		
800	A640	840	F					
A642	Same	842	M					
A643	I	843	F			BP newborn		



May  
1969 \*

DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM -----

Tagging Return Data					Tagging Data		
Nylon Tag No.	Metal Tag No.	Date Seen	A-S	Island	Comments		
					Date tagged	A-S	Island
652	652	May 26	PF	Little North, P+H			
653	653		M	North, P+H			
654	654		M				
655	655		M				
656	656		M				
657	657		M				
658	658		M				
659	659		F				
660	660		F				
661	661		M				
662	662		F				
663	663		F	Seal, P+H			
664	664		M	I			
Nylon	665		F	Kittling, P+H			
667	667		M	Southeast, P+H			

\* Data from Knicker Report. Only Pearl & Hermes visited.  
All but one seal (665) marked with nylon, as well as metal  
tags. One seal (667) tagged with an identical metal control tag



June 1969

GINO  
DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM

Tagging

Return Data

Tagging Data

Tag.  
No.

Date Seen <sup>Tagging</sup>

A-S

Island

<sup>Comments</sup>  
Date tagged

A-S

Island

A 701

June 2

P. M

Laysan

A 702

A 073

A 704

A 705

A 706

A 707

A 708

A 709

A 710

A 711

A 712

A 713

A 714

A 715

A 716

A 717

A 718

A 719

A 720

A 721

A 722

A 723

A 724

A 725

A 726

June 4

P

F

Laysan

A 727

A 728

A 729

A 730

A 731

A 732

A 733

\* Data from Olsen Report. All Laysan seals double tagged with monel as well as with a yellow nylon tag. + Laysan



DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM -----

June  
1969

Return Data

Tagging Data

Tag.  
No.

Date <sup>Tagged</sup> Seen

A-S

Island

Date tagged <sup>Comments</sup>

A-S

Island

A 734 June 4 P F hisianski

A 735

F

A 736

M

A 737

M

A 738

M

A 739

F



6196  
DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM -----

Aug-  
Sept 1969  
\*

Tagging  
Return Data

Tagging Data

Tag. No.	Date Tagged	A-S	Island	Date tagged	A-S	Island
A672	Aug 24	P-M	Whole-Skate, FFS			
A673	1	F	1			
A674	Aug 23	M	Tring, FFS			
A675	Aug 30	F	East, FFS			
671	Sept 9	F	haysan			
668	1	F	1			
A669	Sept 11	M	Seal, P+H			
A670	1	F	1			
740	Sept 12	F	Nuth, P+H			
741	1	M	1			
742	1	M	1			

\* Data from Knoller Report. Seals tagged on FFS, haysan, & P+H  
double tagged with a nylon tag and with a nylon control tag



Final given to JC  
at 17 Mar 70

Table . Observations of Hawaiian Monk Seals at Necker Island.

Dates of Survey	No. Seen	Remarks and References
1886 <sup>late summer or early fall</sup>	"a few"	One or more killed for shark-bait (Farrell, 1928:263)
1894 27-29 May	?	A few seals seen by the annexation party  (Emory, 1928:56).
1964 26 July.	6	Seen swimming in Shark Bay (BSFW).
25-26 Sept.	12	Adults seen hauled out on a rocky shelf on 25 Sep.  Six were females; the sex of the rest was not determined (BSFW, POBSP).
1965 15 Mar.	7	Basking on the Shark Bay side of the shelf connecting the two parts of the island. Six were adults (of which 2 sexed were male and female) and 1 was a subadult female (BSFW, POBSP).
1966 10-11 Sept.	6	Seen in the same locality as in previous observation. Four were adults (of which 2 were females and 1 was a male) and 2 were subadults. One female was molting (BSFW).
1967 10 Mar.	12	Six adults (of which <sup>at least</sup> 1 was a male and 2 were females) and 6 yearlings ( <sup>at least 1 female among them</sup> <del>one a male, one a female</del> ) (BSFW).
15 Sept.	15	Basking in same locality as above. Thirteen were adults (of which 2 were sexed as males and 5 as females), 1 was a yearling male and 1 was a yearling female (BSFW).
1968 28-29 Aug	?	Several seen (BSFW)
1969 22 Mar	20	Seen on the Shark Bay side of the junction between Northwest Cape and the mainland. Seven were adult



Table (cont.).

<u>Dates of Survey</u>	<u>No. Seen</u>	<u>Remarks and References</u>
		males, 4 were pregnant females, 3 were subadults (1 male, 2 female) and 6 were not aged or sexed BSFW).
1969 30 May	6	Basking on rock ledges (BSFW).



Final given to JC  
on 17 Mar 70

Table Observations of Hawaiian Monk Seals at Nihoa Island.

<u>Dates of Survey</u>	<u>No. Seen</u>	<u>Remarks and References</u>
1867 27 Apr.	About a dozen	Seen on beach. Several shot by King Kamehema IV ( <sup>Paty</sup> <del>Patt</del> in Emory, 1928:9).
1940 7-15 Aug.	0	(Vanderbilt and de Schauensee, 1941:8 ).
1953 21-22 Dec.	0	(Kenyon & Rice, 1959:217).
1954 18 Mar.	0	(Kenyon & Rice, 1959:217).
1957 28 Dec.	0	(Rice, 1960:377).
1964 6-7 Mar.	1	A seal seen lying on the small beach on the west side of Adam's Bay on 6 Mar. An adult seen swimming offshore later in the day (POBSP).
23-24 Sept.	1	An adult seen swimming near the landing site (BSFW, POBSP).
1965 13-14 Mar.	6	Three seen each day. Two were adults (a male and a female) and four were subadults (one a female) (BSFW, POBSP).
1966 28 July- 1 Aug.	0	(BSFW, POBSP).
1967 8-9 Mar.	0	(BSFW, POBSP).
13-14 Sept.	0	(BSFW).
1968 7-9 Mar.	0	(BSFW, POBSP)
24-27 Aug.	0	(BSFW)
1969 21 Mar.	0	(BSFW).
29 May.	0	(BSFW).



Karl Kenyon

May 15, 1970

Jane P. Church, Pacific Program

Enclosed data pulled from POBSP files by Roger Clapp

I was much astonished to find these compilations on a desk in a back room yesterday, as I'd been under the impression that they had been sent to you several months ago. When I taxed Roger with this, he said that he didn't have a complete listing for Lisianski and, I believe, Pearl and Hermes (in other words he hasn't checked everyone's field notes). Is it too late to ask you to contribute a paragraph or two for each of our island accounts and a more detailed "chapter" for the summary volume for the Leewards? We close up shop on 30 June.

cc: E. Kridler with enclosures



DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

Sept. \*  
1966

Tagging Data

Tag. No.	Date Tagged	A-S	Island
503	12 Sept.	A-F	Trig, F.F.S.
	13 Sept.		Whale-Skate, FFS
	13 Sept		
506	13 Sept	P-M	
	13 Sept		
	13 Sept		
509	13 Sept	P-M	East, F.F.S. (late pup)
	13 Sept		

\* Data, where available, is from Knidler's notes & reports.



Sept. 1966

DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

Tagging Data

Tag. No.	Date Tagged	A-S	Island
----------	-------------	-----	--------

17-18 Sept.

Laysan

↑  
leave space for 11 entries  
↓

19 Sept

Laysan

↑  
leave space for 15 entries

A 529

S-M

A 633

P-F

21 Sept.	A-F	Grass, P+H
21 Sept.	P-	Seal, P+H **
21 Sept.	P	
21 Sept.	P	
21 Sept.	P	

Kittens, P+H \*\*\*

21 Sept.  
21 Sept.  
21 Sept.  
21 Sept.  
21 Sept.  
21 Sept.

Planetree P+H

\* Knidler notes available to POBSP do not give tagging data. Notes state that 11 seals were tagged on Laysan; 15, 9 of which were pups, were tagged on Lisianski. For Pearl & Hermes notes do not state whether any seals were tagged on Southeast, 20 Sept.

\*\* Species of tagging not given in notes but 2 of pups, males, 2 females

\*\*\* Animals tagged were either adults or subadults



P3

Sept.  
1966

DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

Tagging Data

Tag. No.	Date Tagged	A-S	Island
546	20 Sept		Southeast P+H
	21 Sept		Southeast, P+H +

↑  
leave  
out  
7  
spaces  
↓

22 Sept.	North, P+H.
22 Sept	
22 Sept.	
22 Sept.	
22 Sept.	
22 Sept	
22. Sept	
565 22 Sept.	Little North, P+H
567 22 Sept.	Southeast, P+H

leave  
7  
spaces

	23 Sept.	Southeast, P+H
573	24 Sept.	
588	24 Sept.	
:		
591	24 Sept	

leave  
7  
spaces

\* No tagged on 21, Sept. not given in Knicker notes.  
22, and 23



81

March  
1967 \*

DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A-1	March	P-M	East, F.F.S.	
A-2	March	P-M		
A-3	March	P-F		
A-4	March	Yr-F		moulting
A-5	March	Yr-F		Not moulted
A-6	March 11	P-F		wet, eyes closed, umbilical cord
A-7	March 11	P-F		
A-8	March 13	P-F	Trig, F.F.S.	
A-9		P-M		
A-10		P-F		
A-11		Yr.-M		
A-12		Yr. F		with Smithsonian # 72, not moulted...
A-13		Yr. M		
A-14		P-U		
A-15		P-F		
A-16		P-F		?
A-17		P-M		gray pup
A-18		P-U		?
	March 14		Whale-Skate **	
A-20		P		

\* Data where available, from Knidder refuge log-book (There may well be some errors or omissions as I don't know what data I may have lacked RBC)

\*\* logbook says nine tagged & 1 recovered



Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A-31	MARCH 19	P-F	Laysan	umbilical present; afterbirth alongside, newborn
A-32		M		black pelage
A-33		F		- large
A-34		M		- small
A-35		F		(36") umbilical attached
A-36		Yr M		not moulted
A-37		P-M		black pelage small (40")
A-38		F		1 1
A-39		m		large (48")
A-40		Yr-F		moulting
A-41		M		not moulted - brown
A-42		F		1 - thin
A-43		P-F		black pelage - newly born (30")
A-44		Yr-F		not moulted - brown
A-45		Yr-F		1 1
A-46		P-M		black pelage - small (36")
A-47		Yr-M		not moulted
A-48				moulted
A-49				1
A-50				moulted (early pup?)
A-51				not moulted
A-52		S-F		1
A-53		P-M		black pelage, small (36")
A-54		S-F		not moulted
A-55		P-F		black pelage, large (45")
A-56		M		gray 1 fat & large (55")
A-57		F		↓
A-58		M		black pelage
A-59		F		small (40")
A-60		M		large (48")
A-61		F		small (36")
A-62		M		large fat, (48")
A-63		F		small 1 (40")



P.3

March  
1967

## DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

## Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A 64	Mar. 20?	Yr F	hisianski	Not moulted, brown
A 65		M		
A 66		M		
A 67		P F		Black
A 68		S F		Not moulted, brown
A 69		P M		Black 48"
A 70		P M		42"
A 71		Yr F		not moulted, brown w/ green algae
A 72		M		
A 73		M		
A 74		F		
A 75		F		
A 76		P F		black, fat
A 77		M		
A 78		F		44"
A 79				(by itself)
A 80				
A 81		P M		
A 82		Yr. F		not moulted, brown
A 83		M		
A 84		F		
A 85		F		
A 86		U		
A 87		F		
A 88		M		
A 89		S F		
A 90		P M		black, newly born
A 91	Mar 21(?)	Yr. M	Southeast, P-H	not moulted
A 92		F		
A 93				
A 94				
A 95				
A 96		S F		
A 97		Y F		



P-4

Marat  
1967

DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A 98	Mar. 22	S-F	Grass, P+H	moulted
A 99		P-F	Seal, P+H	
A 100		S-F	Kittery, P+H	
A 101		Yr-M		



## Seal Island Pearl and Hermes Reef -- May 28, 1967

A 102	pup-female	(black pelage)
A 103	pup-male	"
A 104	pup-male	"
A 105	pup-female	"
A 106	pup-female	"

## Lisianski Island -- June 6, 1967

A 107	pup-male	(black pelage)
A 108	pup-female	"
A 109	pup-female	"
A 110	pup-male	" *
A 111	pup-female	"
A 112	pup-male	" *
A 113	pup-female	"

## Laysan Island -- June 10, 1967

A 114	pup-male	(black pelage)	*
A 115	pup-female	"	
A 116	pup-male	"	
A 117	"	"	
A 118	"	"	
A 119	"	"	
A 120	"	"	
A 121	"	"	
A 122	"	"	
A 123	"	"	
A 124	"	"	
A 125	"	(silver pup)	

\* Unaccompanied by female, all other pups were accompanied by females.



DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM

July  
1967\*

Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A 126	July 3		Southeast, P+H	
...				
A 131	July 3		Southeast, P+H	
...				
A 137	July 6		Southeast, P+H	
...				
A 139	July 6		Southeast, P+H	
...				
A 141	July 7		Southeast, P+H	
...				
A 145	July 7		Southeast, P+H	
...				
A 148	July 7		Southeast, P+H	
...				
A 156	July 7		Seal, P+H	
...				
A 159	July 7		Seal, P+H	
...				
A 169	July 9	A-F	Kittery, P+H.	
...				
A 179	July 7		Seal, P+H	
A 180	July 10		Seal, P+H	

\* Seals were tagged during Kniddle's July 1967 visit to Pearl and Hermes but the P+HSP has no report of this visit. Partial information on seal tagging above is assembled from return data given in subsequent reports.



DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

Sept. \*  
1967

Tagging Data

Tag.

No.

Date Tagged

A-S

Island

Comments

A 205 Sept. 17, Yr-F Whale-Island, FFS

A 206 S-M

molted

A 207 Yr-M

not molted

A 208 Yr-F

A 209 S-U

A 210 Yr-M

A 211 Yr-F

A 212 Yr-F

A 213 Yr-F

A 214 Yr-F

molted

A 215 S-F East, FFS

not molted

A 216 Yr-M

A 217 A-F

molted

A 183 Sept 21, A-M Laysan

A 184 10ST

A 185 S-F

A 186 S-F

A 187\* Yr-M

Retagging of A 119, tagged as male black pup by PABSP, June 10, 1967

A 188 S-F

A 189 Yr-M

A 190 Yr-M

A 191 Yr-F

A 192 Yr-F

not molted

A 193 Yr-F

molted

A 194 A-F

A 195 Yr-M

A 196 Yr-M

A 197 Yr-F

molted

A 198 S-F

\* Data, where available, in part from Knudsen notes (Nihoa thru FFS), in part from refuge logbook (Laysan - up chain)

+ Retagging of A 119 tagged as male, black pup by PABSP June 10, 1967



## DATA ON TAGGING

## OF HAWAIIAN MONK SEALS FROM

Sept.  
1967

## Tagging Data

Tag.

No.

Date Tagged

A-S

Island

Comments

A-199 Sept 21 S-m Laysan

A-200 | Yr. M

A-220 | Yr. M

A-221 | Yr. M

A-222 | Yr. M

A-223 | Yr. F

A-224 | Yr. M

A-225 | Yr. M

moulting  
|

A-226 Sept 25 A M hisianski

A-227 | A F

A-228 | Yr. M

A-229 | F

A-230 | M

A-231 | A F

A-232 | F

A-233 | M

A-234 | Yr. M

A-235 | Yr. M

A-236 | A M

A-237 | Y F

A-238 | Y F

A-239 | Y M

A-240 | Y F

A-241 | S U

A-242 | Y F

A-243 | A F

A-244 | Y M

A-245 | Y M

A-276 Sept. 27 Y F

A-277 | A F

A-278 | Yr. M

A-248 | Yr. F

A-249 | Yr. F

A-250 | Yr. F

A-279 | A-F

A-280 DESTROYED

A-281 | Yr F

A-282 LOST

A-283 | Yr F

A-284 | S F

North, P+H

moulted

molting

|

not moulted

|

moulted

Little North, P+H



DATA ON TAGGING

OF HAWAIIAN MONK SEALS FROM

Sept.  
1967

Tagging Data

Tag.

No.

Date Tagged

A-S

Island

Comments

A 285

Sept. 28

Yr. U

Southeast, P+H

A 286

A-F

Grass, P+H

moulting

A 287

A-F

I

A 288

A-F

Kittery, P+H

A 289

A-U

A 290

A-M

A 291

LOST & DESTROYED

P+H

A 292

A-F

Seal, P+H

moulting

A 293

TAG DESTROYED

A 294

A-M



DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

March  
1968 \*

Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A 203	Mar 17-A	S-F	Laysan	
A 251		P-F		
A 252		Y-F		
A 253		P-F		
A 254		Yr F		
A 255		M		
A 256		F		
A 257		S F		
A 258		Yr M		
A 259		F		
A 260		M		
A 261		S F		
A 262		Yr F		
A 263		M		
A 264		M		
A 265		S M		
A 266		Yr F		
A 267		M		
A 268		F		
A 269		M		
A 270		P M		
A 271		Yr M		
A 272		P M		
A 273		P F		
A 274		P F		
A 275		Yr M		
A 298	Mar 18	P F		
A 299	Mar 17-19	S F		
A 300		S F		
A 301		Yr M		
A 302		P M		
A 303		M		
A 304		F		
A 305		F		
A 306		M		
A 307		M		green pup

\* Data in Clapp PCBSP report that was obtained in the field from E. Knoller, et. al.

\*\* Yellow streamers affixed to tags



## DATA ON TAGGING

OF HAWAIIAN MONK SEALS FROM

March

1968

## Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A 308*	Mar. 20	Yr M	hisianski	
A 309		I F		
A 310		P M		
A 311		Yr M		gray pup
A 312		I F		
A 313		I M		
A 314		I M		
A 315		P M		
A 316		I F		
A 317		I F		
A 318		I F		
A 319		I F		
A 320		I M		
A 321		P M		
A 326		Yr M		
A 327		Yr F		
A 328		P-M		
A 329		P-F		
A 330		Yr M		
A 331	Mar. 21	Yr F		
A 332		P M		
A 333		Yr F		
A 334		Yr M		
A 335		Yr M		
A 336	Mar 22	Yr M	Southeast, P+H	
A 337		Yr M		
A 338		Yr F		
A 339		Yr M		
A 340	Mar 24	S M	Grass, P+H	
A 341		P-F	Seal, P+H	
A 342		P-F		
A 343		Yr F		

\* gray streamers affixed to tags of hisianski seals  
 \*\* white " " " " " P+H seals



DATA ON TAGGING

OF HAWAIIAN MONK SEALS FROM

Sept.  
1968

Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
			Laysan	
A 376	Sept 5, 1968	P		
A 379	Sept. 1968			
A 385				
A 393				
A 395				

\* PABSP has no report from Laysan. Kridler has data



DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

Feb.  
1969 \*

Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A 363	Feb 11	yr M	Southwest, P.H.	
A 364		F		
A 365		F		
A 366		F		
A 367		F		
A 368		M		
A 369		F		
A 370	Feb 11	M		
A 371		F		

\* Data from Kriller report. Only Pearl & Hermes visited  
 \*\* All seals tagged with a metal and a yellow plastic tag



DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

May  
1969 \*

Tagging Data

Nylon Tag No.	Tag. No.	Date Tagged	A-S	Island	Comments
652	652	May 26	P F	Little North, P+H	
653	653		M	North, P+H	
654	654		M		
655	655		M		
656	656		M		
657	657		M		
658	658		M		
659	659		F		
660	660		F		
661	661		M		
662	662		F		
663	663		F	Seal, P+H	
664	664		M	I	
Nare	665		F	Kittling, P+H	
667	667		M	Southeast, P+H	

\* Data from Knicker Report. Only Pearl & Hermes visited.  
All but one seal (665) marked with nylon, as well as metal  
tags. One seal (667) tagged with an identical metal control tag



June 1969\*

## DATA ON TAGGING

OF HAWAIIAN MONK SEALS FROM -----

## Tagging Data

Tag.

No.

Date Tagged

A-S

Island

Comments

A 701

June 2

P-M

Laysan

A 702

A 073

A 704

A 705

A 706

A 707

A 708

A 709

A 710

A 711

A 712

A 713

A 714

A 715

A 716

A 717

A 718

A 719

A 720

A 721

A 722

A 723

A 724

A 725

A 726

June 4

P

F

Laysan

A 727

A 728

A 729

A 730

A 731

A 732

A 733

\* Data from Olsen Report. All Laysan seals double tagged with monel as well as with a yellow nylon tag.

+ Laysan



DATA ON TAGGING

OF HAWAIIAN MONK SEALS FROM

June  
1969Return Data

Tag.

No.

Date Tagged

A-S

Island

Comments

A 734 June 4 P F Lisianski

A 735

F

A 736

M

A 737

M

A 738

M

A 739

F



## DATA ON TAGGING

OF HAWAIIAN MONK SEALS FROM

Aug-  
Sept 1969  
\*

## Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A672	Aug 24	P-M	Whole Skate, FFS	
A673	1	F	1	
A674	Aug 23	M	Tring, FFS	
A675	Aug 30	F	East, FFS	
671	Sept 9	F	haysan	
668	1	F	1	
A669	Sept 11	M	Seal, P+H	
A670	1	F	1	
740	Sept 12	F	Nnth, P+H	
741	1	M	1	
742	1	M	1	

\* Data from Knoller Report. Seals tagged on FFS, haysan, & P+H  
double tagged with ~~nylon~~ and with a nylon control tag



DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

Sept. \*  
1966

Tagging Data

Tag. No.	Date Tagged	A-S	Island
503	12 Sept.	A-F	Trig, F.F.S.
	13 Sept.		Whale-Skate, FFS
	13 Sept		
506	13 Sept	P-M	
	13 Sept		
	13 Sept		
509	13 Sept	P-M	East, F.F.S. (late pup)
	13 Sept		

\* Data, where available, is from Knidler's notes & reports.



Sept. 1966

DATA ON TAGGING

OF HAWAIIAN MONK SEALS FROM -----

Tagging Data

Tag.

No.

Date Tagged

A-S

Island

17-18 Sept.

Laysan

↑  
leave space for 11 entries  
↓

19 Sept

Laysan

A 529

S-M

A 633

P-F

21 Sept.

A-F

Grass, P+H

21 Sept.

P-

Seal, P+H \*\*

21 Sept.

P

21 Sept.

P

21 Sept.

P

21 Sept.

Kittery, P+H \*\*\*

21 Sept.

21 Sept.

21 Sept.

21 Sept.

21 Sept.

plane tree P+H

\* Knidler notes available to POBSP do not give tagging data. Notes state that 11 seals were tagged on Laysan; 15, 9 of which were pups, were tagged on Lisianski. For Pearl & Harries notes do not state whether any seals were tagged on Southeast, 20 Sept.

\*\* Specifics of tagging not given in notes but 2 of pups, males, 2 females

\*\*\* Animals tagged were either adults or subadults



## DATA ON TAGGING

OF HAWAIIAN MONK SEALS FROM -----

Sept.  
1966Tagging Data

Tag. No.	Date Tagged	A-S	Island
546	20 Sept		Southeast P+H
	21 Sept		Southeast, P+H

22 Sept.

North, P+H.

22 Sept.

22 Sept.

22 Sept.

22 Sept.

22 Sept.

22 Sept.

565 22 Sept.

Little North, P+H

567 22 Sept.

Southeast, P+H

23 Sept.

Southeast, P+H

573 24 Sept.

588 24 Sept.

591 24 Sept.

\* No tagged on 21, Sept. not given in Knicker notes.  
22, and 23



Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A-1	March	P-M	East, F.F.S.	
A-2	March	P-M		
A-3	March	P-F		
A-4	March	Yr-F		Moulting
A-5	March	Yr-F		Not moulting
A-6	March 11	P-F		
A-7	March 11	P-F		Wet, eyes closed, umbilical cord
A-8	March 13	P-F	Trig, F.F.S.	
A-9		P-M		
A-10		P-F		
A-11		Yr-M		
A-12		Yr-F		with Smithsonian # 72, not moulting...
A-13		Yr-M		
A-14		P-U		
A-15		P-F		
A-16		P-F	?	
A-17		P-M	?	gray pup
A-18		P-U	?	
	March 14		Whale-Skate **	
A-20		P		

\* Data where available, from Knicker refuge log-book (There may well be some errors or omissions as I don't know what data I may have lacked etc)

\*\* logbook says nine tagged & 1 recovered



March  
1967

## Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A-31	MARCH 19	P-F	Kauai	umbilical present; afterbirth alongside, newborn
A-32		M		black pelage
A-33		F		- large
A-34		M		- small
A-35		F		(36") umbilical attached
A-36		Yr M		not moulted
A-37		P-M		black pelage small (40")
A-38		F		1 1
A-39		M		large (48")
A-40		Yr-F		moulted
A-41		M		not moulted - brown
A-42		F		1 - thin
A-43		P-F		black pelage - newly born (30")
A-44		Yr-F		not moulted - brown
A-45		Yr-F		1 1
A-46		P-M		black pelage - small (36")
A-47		Yr-M		not moulted
A-48				moulted
A-49				1
A-50				moulted (early pup?)
A-51				not moulted
A-52		S-F		1
A-53		P-M		black pelage, small (36")
A-54		S-F		not moulted
A-55		P-F		black pelage, large (45")
A-56		M		gray 1 fat + large (55")
A-57		F		↓
A-58		M		black pelage
A-59		F		small (40")
A-60		M		large (48")
A-61		F		small (36")
A-62		M		large fat (48")
A-63		F		small 1 (40")



March  
1967

DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A 64	Mar. 20?	Yr F	Laysan	Not moulted, brown
A 65		M		
A 66		M		
A 67		P F		Black
A 68		S F		Not moulted, brown
A 69		P M		Black 48"
A 70		P M		42"
A 71		Yr F		not moulted, brown w/ green algae
A 72		M		
A 73		M		
A 74		F		
A 75		F		
A 76		P F		black, fat
A 77		M		
A 78		F		44"
A 79				(by itself)
A 80				
A 81		P M		
A 82		Yr. F		not moulted, brown
A 83		M		
A 84		F		
A 85		F		
A 86		U		
A 87		F		
A 88		M		
A 89		S F		
A 90		P M		black, newly born
A 91	Mar 21(?)	Yr. M	Southeast, P-H	not moulted
A 92		F		
A 93				
A 94				
A 95				
A 96		S F		
A 97		Y F		



P-4

March

## DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

1967

Tagging Data

<u>Tag. No.</u>	<u>Date Tagged</u>	<u>A-S</u>	<u>Island</u>	<u>Comments</u>
A 98	Mar. 22	S-F	Grass, P+H	moulted
A 99		P-F	Seal, P+H	
A 100		S-F	Kittery, P+H	
A 101		Yr-M		



May-June, 1967

## Seal Island Pearl and Hermes Reef -- May 28, 1967

A 102	pup-female	(black pelage)
A 103	pup-male	"
A 104	pup-male	"
A 105	pup-female	"
A 106	pup-female	"

## Lisianski Island -- June 6, 1967

A 107	pup-male	(black pelage)
A 108	pup-female	"
A 109	pup-female	"
A 110	pup-male	"
A 111	pup-female	"
A 112	pup-male	"
A 113	pup-female	"

## Laysan Island -- June 10, 1967

A 114	pup-male	(black pelage)	*
A 115	pup-female	"	
A 116	pup-male	"	
A 117	"	"	
A 118	"	"	
A 119	"	"	
A 120	"	"	
A 121	"	"	
A 122	"	"	
A 123	"	"	
A 124	"	"	
A 125	"	(silver pup)	

\* Unaccompanied by female, all other pups were accompanied by females.



July  
1967\*

DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A 126	July 3		Southeast, P+H	
...				
A 131	July 3		Southeast, P+H	
...				
A 137	July 6		Southeast, P+H	
...				
A 139	July 6		Southeast, P+H	
...				
A 141	July 7		Southeast, P+H	
...				
A 145	July 7		Southeast, P+H	
...				
A 148	July 7		Southeast, P+H	
...				
A 156	July 7		Seal, P+H	
...				
A 159	July 7		Seal, P+H	
...				
A 169	July 9	A-F	Kittery, P+H.	
...				
A 179	July 7		Seal, P+H	
A 180	July 10		Seal, P+H	

\* Seals were tagged during Kridler's July 1967 visit to Pearl and Hermes but the PCBSP has no report of this visit. Partial information on seal tagging above is assembled from return data given in subsequent reports



## DATA ON TAGGING

OF HAWAIIAN MONK SEALS FROM

Sept. \*  
1967

## Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A 205	Sept. 17,	Yr-F	Whale-Skate, FFS	
A 206		S-M		molted
A 207		Yr-M		no not molted
A 208		Yr-F		
A 209		S-U		
A 210		Yr-M		
A 211		Yr-F		
A 212		Yr-F		
A 213		Yr-F		
A 214		Yr-F		molted
A 215		S-F	East, FFS	not molted
A 216		Yr-M		
A 217		A-F		molted
A 183	Sept 21,	A-M	Laysan	
A 184		LOST		
A 185		S-F		
A 186		S-F		
A 187*		Yr-M		Retagging of A 119, tagged as male black pup by PABSP, June 10, 1967
A 188		S-F		
A 189		Yr-M		
A 190		Yr-M		
A 191		Yr-F		
A 192		Yr-F		not molted
A 193		Yr-F		molted
A 194		A-F		
A 195		Yr-M		
A 196		Yr-M		
A 197		Yr-F		molted
A 198		S-F		

\* Data, where available, in part from Knudsen notes (Nihoa thru FFS), in part from refuge logbook (Laysan - up chain)

F Retagging of A 119 tagged as male, black pup by PABSP June 10, 1967



Sept.  
1967

## Tagging Data

Tag.

No.

Date Tagged

A-S

Island

Comments

A-199 Sept 21

S-m

Laysan

A-200

Yr. M

A-220

Yr. M

moulting

A-221

Yr. M

A-222

Yr. M

A-223

Yr. F

A-224

Yr M

A-225

Yr M

A-226 Sept 25

A M

hisianski

A-227

A F

moulting

A-228

Yr. M

A-229

F

A-230

M

A-231

A F

A-232

F

A-234

M

A-235

Yr M

A-236

Yr M

A-237

A M

A-238

Y F

A-239

Y F

A-240

Y M

A-241

Y F

A-242

S U

A-243

Y F

A-244

A F

A-245

Y M

A-276 Sept. 27

Y F

North, P+H

moulted

A-277

A F

moulting

A-278

Yr M

A-248

Yr F

not moulted

A-249

Yr F

A-250

Yr F

moulted

A-279

A-F

Little North, P+H

A-280

DESTROYED

A-281

Yr F

A-282

LOST

A-283

Yr F

A-284

S F



## DATA ON TAGGING

OF HAWAIIAN MONK SEALS FROM -----

Sept.  
1967

## Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A 285	Sept. 28	Yr. U	Southeast, P+H	
A 286		A-F	Grass, P+H	moulting
A 287		A-F	I	
A 288		A-F	K. Henry, P+H	
A 289		A-U		
A 290		A-M		
A 291	LOST & DESTROYED		P+H	
A 292		A-F	Seal, P+H	moulting
A 293	TAG DESTROYED			
A 294		A-M		



## Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A 203	Mar 17-19	S-F	Laysan	
A 251		P-F		
A 252		Y-F		
A 253		P-F		
A 254		Yr F		
A 255		M		
A 256		F		
A 257		S F		
A 258		Yr M		
A 259		F		
A 260		M		
A 261		S F		
A 262		Yr F		
A 263		M		
A 264		M		
A 265		S M		
A 266		Yr F		
A 267		M		
A 268		F		
A 269		M		
A 270		P M		
A 271		Yr M		
A 272		P M		
A 273		P F		
A 274		P F		
A 275		Yr M		
A 298	Mar 18	P F		
A 299	Mar 17-19	S F		
A 300		S F		
A 301		Yr M		
A 302		P M		
A 303		M		
A 304		F		
A 305		F		
A 306		M		gray pup
A 307		M		

\* Data in Clapp PCBSP report that was obtained in the field  
from E. Kridler, et al.

\* Yellow streamers affixed to tags



## Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A 308*	Mar. 20	4r M	hisiranski	
A 309		1 F		
A 310		P M		gray pup
A 311		4r m		
A 312		1 F		
A 313		1 M		
A 314		1 M		
A 315		P M		
A 316		1 F		
A 317		1 F		
A 318		1 F		
A 319		1 F		
A 320		1 M		
A 321		P M		
A 326		4r M		
A 327		4r F		
A 328		P-M		
A 329		P-F		
A 330		4r M		
A 331	Mar. 21	4r F		
A 332		P M		
A 333		4r F		
A 334		4r M		
A 335		4r M		
A 336	Mar 22	4r M	Southeast, P+H	
A 337		4r M		
A 338		4r F		
A 339		4r M		
A 340	Mar 24	S M	Grass, P+H	
A 341		P-F	Seal, P+H	
A 342		P-F		
A 343		4r F		

\* gray streamers affixed to tags of hisiranski seals  
 → white " " " " " P+H seals



DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

Sept.  
1968

Tagging Data

<u>Tag.</u> <u>No.</u>	<u>Date Tagged</u>	<u>A-S</u>	<u>Island</u>	<u>Comments</u>
			Laysan	
A 376	Sept 5, 1968	P		
A 379	Sept. 1968			
A 385				
A 393				
A 395				

\* PABSP has no report from Laysan. Kridler has data



## DATA ON TAGGING

OF HAWAIIAN MONK SEALS FROM -----

Feb.  
1969 \*

## Tagging Data

Tag. **				
No.	Date Tagged	A-S	Island	Comments
A 363	Feb 11	yr M	Southwest, P+H	
A 364		F		
A 365		F		
A 366		F		
A 367		F		
A 368		M		
A 369		F		
A 370	Feb 11	M		
A 371		F		

\* Data from Knoller report. Only Pearl & Hermes visited  
\*\* All seals tagged with a monel and a yellow plastic tag



May  
1969 \*

## Tagging Data

<u>Nylon Tag</u>	<u>Tag. No.</u>	<u>Date Tagged</u>	<u>A-S</u>	<u>Island</u>	<u>Comments</u>
652	652	May 26	F	Little North, P+H	
653	653		M	North, P+H	
654	654		M		
655	655		M		
656	656		M		
657	657		M		
658	658		M		
659	659		F		
660	660		F		
661	661		M		
662	662		F		
663	663		F	Seal, P+H	
664	664		M	I	
Nine	665		F	Kittling, P+H	
667	667		M	Southeast, P+H	

\* Data from Knicker Report. Only Pearl & Hermes visited.  
 All but one seal (665) marked with nylon, as well as metal  
 tags. One seal (667) tagged with an identical metal control tag



June 1969\*

## DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM -----

## Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A 701	June 2	P. M	Laysan	
A 702				
A 013				
A 704		F		
A 705		M		
A 706		M		
A 707		F		
A 708		M		
A 709				
A 710				
A 711		F		
A 712		M		
A 713		M		
A 714		F		
A 715		M		
A 716		F		
A 717		M		
A 718		F		
A 719		F		
A 720		M		
A 721		F		
A 722		F		
A 723		M		
A 724		F		
A 725		M		
A 726	June 4	P F	Laysan	
A 727				
A 728				
A 729		M		
A 730		F		
A 731		F		
A 732		M		
A 733		F		

\* Data from Olsen Report. All Laysan seals double tagged with monel as well as with a yellow nylon tag. <sup>+ hisianaki</sup>



DATA ON TAGGING

OF HAWAIIAN MONK SEALS FROM

June  
1969

Return Data

Tag.

No.

Date Tagged

A-S

Island

Comments

A 734 June 4 P F Lisianski

A 735 F

A 736 M

A 737 M

A 738 M

A 739 F



## DATA ON TAGGING

OF HAWAIIAN MONK SEALS FROM

Aug-  
Sept 1969  
\*Tagging Data

Tag. No.	Date Tagged	A-S	Island	Comments
A672	Aug 24	P-M	Whole-Skate, FFS	
A673	1	F	1	
A674	Aug 23	M	Tring, FFS	
A675	Aug 30	F	East, FFS	
671	Sept 9	F	kaysan	
668	1	F	1	
A669	Sept 11	M	Seal, P+H	
A670	1	F	1	
740	Sept 12	F	Nuth, P+H	
741	1	M	1	
742	1	M	1	

\* Data from Knoller Report. Seals tagged on FFS, kaysan, & P+H  
double tagged with mylar and with a nylon control tag



## DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM

March 1969\*

## Tagging Data

Yellow Plastic Tag	Metal Tag No.**	Other Tag No.***	Sex	Island	Date Tagged	Cold- Brand Mark	Age
A602	Same	802	F	Laysan	26 Mar. 1969	L-5	B.P. 1 week
A603	"	803	M	"	"	L-8	" newborn
A604	"	804	M	"	"	L-7	" 2 weeks
A605	"	805	M	"	"	L->	" newborn
A606	"	806	F	"	"	L-J	G.P. weaned, no mother
A607	"	807	F	"	"	L-✓	" weaned, no mother
A608	"	808	M	"	"		B.P. newborn
A609	"	809	F	"	"		G.P. 6 weeks
A610	"	810	M	"	"		" weaned, no mother
A611	"	811	M	"	"		B.P. newborn
A612	"	812	F	"	"		" 3 weeks
A613	"	813	F	"	"		" "
None	A614	814	F	"	"		" newborn
A615	Same	815	F	"	"		G.P. weaned, no mother
A616	"	816	F	"	"		" weaned, no mother
A617	"	817	M	"	"		Yrl.
A618	"	818	F	"	"		"
A619	"	819	F	"	"		"



## DATA ON TAGGING OF HAWAIIAN MONK SEALS FROM

March 1969\*

## Tagging Data

<u>Yellow Plastic Tag</u>	<u>Metal Tag No.**</u>	<u>Other Tag No.***</u>	<u>Sex</u>	<u>Island</u>	<u>Date Tagged</u>	<u>Cold- Brand Mark</u>	<u>Age</u>
A620	Same	820	F	Laysan	26 Mar. 1969		B.P. newborn
A621	"	821	F	"	"		Yrl.
A622	"	824	M	"	"	None	"
A623	"	823	M	"	"	"	"
A624	"	822	F	"	"	"	"

---

\* Data from Kridler Report

\*\* On left rear flipper

\*\*\* On right rear flipper



DATA ON TAG-RETURNS OF HAWAIIAN MONK SEALS FROM

don't type lines

MARCH 1969

Taggy Data

Return Data

Tagging Data

Yellow Plastic Tag	metal Tag. No. **	Other Tag *** No. Tagged	Date Seen	Sex	Island	Date Tagged	Cold-Brand Mark	Age
A602	Same	802		F	Laysan	26 Mar. 1969	L - F	B.P. 1 week
A603		803		M			L - ^	B.P. newborn
A604		804					L - 7	B.P. 2 weeks
A605		805					L - >	B.P. newborn
A606		806		F			L - J	G.P. weaned, no mother
A607		807					L - V	" " "
A608		808		M				B.P. newborn
A609		809		F				G.P. 6 weeks
A610		810		M				G.P. weaned, no mother
A611		811						B.P. newborn
A612		812		F				B.P. 3 weeks
A613		813						
None	A614	814						B.P. newborn
A615	same	815						G.P. weaned, no mother
A616		816						
A617		817		M				Yrl.
A618		818		F				
A619		819						
A620		820						B.P. newborn
A621		821						Yrl
A622		824		M			Done	
A623		823						
A624		824		F				

\* Data from Knicker Report

\*\* On left rear flipper

\*\*\* On right rear flipper



Robt. L. DeLong

SMITHSONIAN INSTITUTION  
UNITED STATES NATIONAL MUSEUM  
WASHINGTON, D. C. 20560

W. D. Witz

Monachus Pop Dyn.

& movement

Comitron name - R. L. DeLong

1) Abstract: Have we abstracted a Population

Dynamics article - No reference in

Abstract of population Dynamics. Reference is  
is made to tagging & returns - (abstraction of ~~these~~  
movement behavior)

2. P. 2 & 3. Subadults ranging from 200 to 400 lb  
Is the wgt. alone basis for <sup>differentially</sup> ~~determining~~ sex &  
gender from a sub adult.

What is a sub adult - a ~~sex~~ multiparous ♀ or  
non breeding young bull.

3) Table 10 What are juvenile animals? are  
these the Natal pelage pups. Or does this  
include animals up to 1 year of age? Your reference  
is to 56 tagged pups at Kure but this is not in the table (11.)

4) The reference of subadults (hereafter referred to as adults)  
is not good. ~~If~~ If they are sub adults then they are  
Not adults.



5). Index Atoll movements: I find the coordinates listed periodically of little value. Could a chart be added to show the locations of the atolls and a single listing of coordinates be included if the latter is necessary?

6 Index Atoll movements - Couldn't these all be tabularized so the reader would not have to plow through this text to find them. Then the text could be shortened.

7 Was it possible to age the seal remains - were they adults or pups - if the latter they belong elsewhere.

8 All the evidence presented on shark attacks belongs more properly to morbidity than to mortality. In no case have we demonstrated with all this narration that sharks caused mortality.



(9) I question that animals go to sea during strong periods. I base this upon observation of one Lisianski, June 1967. During a 36 hour blow (winds to 45 km.) the animals hauled out high, lay on the beach crust in the Scorpaenids. upon the termination (I am sure plane is passing about - in rough air) of this blow, the animals returned to the water edge - hauled in - and many went to sea.

You later in the same survey week say that during a blow in Dec. 1964 you had a peak of abundance on the island.

10 Be careful about attributing wandering as due to anything but "wanderlust". No literature documentation for grainers being driven "off course" by foul weather. It is not an idea that helps the sentence nor the paper.



ADD

① Tag numbers  
Returns

② not  
SI Woodcock D.H. 1961 Report on a  
trip to Laysan Island September 1961.  
Miner., Bur. Lands and Nat. Res.,  
State of Hawaii.

③ unpublished report of

more credit to FWS  
for contributed counts  
— date



PANAMA

Columbidae

Species Seen:

Ruddy Ground Dove Columbigallina talpacoti



Table — Seasonal variation in observed sex-ratios in different age-groups of Hawaiian Monk Seals on ~~Laysan~~ <sup>Kauai</sup> Island

Season	ADULTS				SUB-ADULTS / YEARLINGS				PUPS			
	No. of ♂♂ *	% of ♂♂	No. of ♀♀	% of ♀♀	No. of ♂♂	% of ♂♂	No. of ♀♀	% of ♀♀	No. of ♂♂	% of ♂♂	No. of ♀♀	% of ♀♀
Spring (Mar.)-May)	6/191 3/85	43.3 40.9	6/250 3/123	56.7 59.1	6/137 3/71	45.8 42.5	6/162 3/96	54.2 47.5	4/41 1/9	52.6 52.9	4/37 1/8	47.4 47.1
Summer (June, Aug.)	3/48	42.4	3/65	57.6	3/21	45.7	3/25	54.3	4/72 3/47	72.7	4/27 3/17	27.3 23.0
Autumn (Sept. - Oct.)	4/145 3/105	62.5 64.4	4/87 3/58	37.5 35.6	4/57 3/51	56.4 54.8	4/44 3/42	43.6 45.2	2/17 1/16	80.0 51.6	2/17 1/15	50.0 48.4
Winter (Dec. + Feb.)	2/28	50.9 51.1	2/27 2/22	49.1 48.9	2/10	35.7 (20.0)	2/14	64.3 (80.0)	0/0	100.0	0/0	0.0

\* The figure to the left of the virgule is the number of counts made in each season; the one to the right is the total number observed in each season.

in which sex ratios were recorded for the age class and for which data is available.





UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE  
Sand Point Naval Air Station  
Seattle 15, Washington

*Seals*

30 April 1963

Mr. William O. Wirtz II  
Research Curator, Pacific Project  
Division of Birds  
Smithsonian Institution  
Washington 25, D. C.

Dear Bill:

Many thanks for your interesting letter of 24 April telling me of your field work in the Leeward Hawaiian Islands and asking for information on the monk seals which were tagged on Laysan Island in 1957.

The animal bearing the tag MS 68 was a male pup, which I presume had just molted its black coat as Woodside lists it as being brown. It was tagged on 26 June 1957 on the west beach, which I judge is approximately the same place where you found it.

I am glad to hear of your success in tagging 156 seals. I can imagine though the brute force technique must have been quite strenuous. Dale Rice and I wrestled several yearlings into a net for weighing and found this an energy consuming job for two men.

I will certainly look forward to hearing more of the results of this first trip and of your projected one in June in the future.

Attached is a copy of a letter from Mr. David H. Woodside which he sent me on 30 July 1957, giving the data on the monk seals that he tagged. It includes a map of Laysan Island showing where albatrosses were banded. You may find this useful.

Sincerely yours,

Karl W. Kenyon  
Biologist

Encl.



December 31, 1964

AIRMAIL

Dr. Karl W. Kenyon  
Bureau of Sports  
Fisheries and Wildlife  
Branch of Wildlife Research  
Sand Point Naval Air Station,  
Building 192  
Seattle, Washington 98115

Dear Karl:

I have just recently returned to Washington from five months in the field and am slowly wading through my mail; thus the long delay in answering your letter of 17 July.

Our project isn't doing too much with the monk seal, though I have several small projects going on Kure. We have tagged about three hundred animals to date, chiefly on Kure and Pearl and Hermes Reef, with a yellow plastic cattle ear tag on the left rear flipper. The tags seem to be holding up well. They fade, but the printing is indented and doesn't wear off badly; and occasionally they pull out of the flipper or break off. I haven't found any more of your tags since the one on Laysan in early 1963.

A major portion of the herd using Kure is tagged and we collect regular information on the movements of tagged individuals. We census the entire island at least once a week, and the Coast Guardsmen also bring in tag numbers on their jaunts around the beach. We record locality within 100 yard intervals and take notes on relationships between individuals, time of day seen, and so on. Two years of this information should prove interesting.

All but one of the thirty-four pups born on Kure this year was tagged at birth and we collected irregular growth and development data on them till the time they all disappeared from the island in June. I can't give my notes back here now, but I'm quite sure that we know that most of these pups didn't make it, and eleven of them died of injuries to the back of the neck which I believe result from attacks by adult seals other than the parents. The wound is fist-sized; a chunk taken out of the neck or upper back, usually down to the bone. There is usually no further damage, and I feel a shark would hit the side or underparts and do more damage. We have taken seal remains out of large sharks. I also don't feel that a human could make this type of wound, and we have generally enjoyed excellent cooperation from the Coast Guard. There were two adults found dead while I was away in



June, and both of these had crushed areas in the skull that I feel could have been caused by a 1 inch pipe. The station had a puppy which was killing birds for awhile, but I made them get rid of it. These are the only instances of molestation of wildlife of any kind on Kure that have occurred since I have been working there.

As I mentioned, the pups all disappeared from the island, and this includes the reef and sand spits, in June when they were still in their black pelage, and none have been seen to date. I can't begin to guess where they have gone, but even if they all survive the herd has only produced one live young for every nine adults. The state has given permits for seven adults off Kure since I have been there, and of these only four are alive, two at Sea Life Park and, I think, two at Waikiki Aquarium. Two of the dead died before they got off Kure. I have collected two adults for the Museum on a permit for six. The permit was gotten only to give me legal leeway to try to develop a tranquilizer dosage for them, and I have been unsuccessful so far.

The other Leewards are very rarely visited by military personnel, and since Gene Kriedler has gone to Honolulu this will probably be less frequent. The seals are just about gone from Midway; I've gotten a maximum of eleven at one time. Most of the animals on Kure are more skittish than those on the uninhabited islands, and even though they are seldom harassed by Guardsmen, just people and an occasional vehicle on the beach have probably done this. Most of the pups were born this year on the southwest beaches, which are also more frequently used by humans. However, none of the eleven pups killed were young; they were a couple of months old and 100 pounds or so, so I don't feel that disturbance caused the killings.

I hope I haven't rambled too much here, but I have tried to go over all the pertinent points. The species seems to have a very low reproductive potential and certainly needs continued careful protection if it is to survive. It also doesn't do well with human disturbance, even if just minor harassment, so its haven is certainly the uninhabited islands of the federal refuge.

Sincerely,

William O. Wirtz, II  
Research Curator, Pacific Project  
Division of Birds



Table \_\_\_\_ Seasonal variation in observed sex-ratios in different age-groups of Hawaiian Monk Seals on Lisianski

Season	ADULTS				SUB-ADULTS / YEARLINGS				PUPS			
	No. of ♂♂ 1*	% of ♂♂	No. of ♀♀	% of ♀♀	No. of ♂♂	% of ♂♂	No. of ♀♀	% of ♀♀	No. of ♂♂	% of ♂♂	No. of ♀♀	% of ♀♀
Spring (Mar.-May)	4/188 <del>3/96</del>	52.8 <del>45.9</del>	4/168 <del>3/113</del>	47.2 <del>54.1</del>	4/69 <del>3/39</del>	53.1 <del>59.1</del>	4/61 <del>3/27</del>	46.9 <del>40.9</del>	3/19	50.0	3/19	50.0
Summer (June-Aug.)	2/74	50.7	2/72	49.3	2/22	53.7	2/19	46.3	3/1825 <del>3/25</del>	38.5 <del>40.9</del>	3/26 <del>3/26</del>	61.5 <del>59.1</del>
Autumn (Sept.-Nov.)	4/189 <del>3/156</del>	67.3 <del>70.3</del>	4/92 <del>3/66</del>	32.7 <del>29.7</del>	4/36 <del>3/28</del>	45.6 <del>40.7</del>	4/43 <del>3/32</del>	54.4 <del>53.4</del>	2/13	54.2	2/11	45.8
Winter (Dec.-Feb.)	1/128	66.7	1/4	33.3	No data available				1/0	100.0	1/0	0.0

\* The figure to the left of the virgule is the number of counts made in each season; the one to the right is the total number observed in each season.

2. All data from March

3. Data from Feb.

3. " " June

4. Data from Sept. and Oct.

in which sex ratios were recorded for the age class and from

Table \_\_\_\_ Seasonal variation in observed sex-ratios in different age-groups of Hawaiian Monk Seals on Laysan

Season	ADULTS				SUB-ADULTS / YEARLINGS				PUPS			
	No. of ♂♂ *	% of ♂♂	No. of ♀♀	% of ♀♀	No. of ♂♂	% of ♂♂	No. of ♀♀	% of ♀♀	No. of ♂♂	% of ♂♂	No. of ♀♀	% of ♀♀
Spring (Mar.-May)	3/85	40.9	3/123	59.1	3/71	42.5	3/96	47.5	1/9	52.9	1/8	47.1
Summer (June-Aug.)	3/48	42.5	3/65	57.5	3/21	45.7	3/25	54.3	3/57	77.0	3/17	23.0
Autumn (Sept.-Nov.)	3/105	64.4	3/58	35.6	3/51	54.8	3/42	45.2	1/16	51.6	1/15	48.4
Winter (Dec.-Feb.)	1/23	51.1	1/22	48.9	1/2	(20.0)	1/8	(80.0)	0/0	----	0/0	----

1.\* The figure to the left of the virgule is the number of counts made in each season; the one to the right is the total number observed in each season.

in which sex ratios were recorded for the age class and for which data is available.



addition

May Given to Jane  
17 Mar 70

Table . Population Counts of Hawaiian Monk Seals on Lisianski Island

Date of Survey		No. of <sup>1</sup> Seals Counted	Adults		Subadults		Yearlings		Pups		Remarks, Source of Data
			No.	%	No.	%	No.	%	No.	%	
1951	13 May	195	---	---	---	---	---	---	---	---	Newly born pups. seen (POBI)
1954	26 Mar.	115	---	---	---	---	---	---	---	---	Sumner, 1959
1957	15 April	256	---	---	---	---	---	---	15	5.9	Kenyon & Rice, 1959
1958	28 June	281	---	---	---	---	---	---	34	12.1	Rice, 1960
1961	9 March	172	117	68.0	---	---	36	20.9	19	11.0	Woodside & Kramer, 1961(ms.)
1963	14 Feb	144 <sup>2</sup>	---	---	---	---	50(?)	---	3	2.1	POBSP
	12 March	96 <sup>3</sup>	---	---	---	---	---	---	13	---	POBSP
1964	12 March	180	102	56.7	71	39.4	---	---	7	3.9	Walker 1964 notes BSFW
	21 August	144	---	---	---	---	---	---	1	0.7	POBSP
	18 Sept	121 <sup>4</sup>	85	72.0	---	---	33	28.0	0	0.0	BSFW
1965	12 March	187 <sup>5</sup>	---	---	---	---	---	---	15	8.0	POBSP
	13 July	161	---	---	---	---	---	---	---	---	POBSP

<sup>1</sup> Figures in this column may be larger than the total number listed in the other columns. (On a given count some of the seals counted may not have been aged. Percentages are usually based on the total number of animals aged which may not be the same as the total count figure. In some instances pup percentage is figured as percentage of total count.

<sup>2</sup> Pup figure includes 1 dead pup and 1 50-75 pound animal. "Yearling" class probably subsume some which would be more typically treated as subadults. In his ms. Wirtz treated animals tagged as yearlings (in original data) as subadults. Count listed above based on tagging operation with count of other seals seen. Originally totaled by Wirtz (in field rept. and ms.) as 210 but retotaled by RBC as above. 210 "count" made in Feb. listed in ms. as March.

<sup>3</sup> Total includes two dead pups and a dead adult. Complete count made around beaches but others had preceded count makers down beach thus accounting for this unrealistically low figure.

<sup>4</sup> Total includes 3 unaged animals.

<sup>5</sup> Figure includes 1 dead adult.



Table (cont.)		No. of <sup>1</sup>		Adults		Subadults		Yearlings		Pups		Remarks, Source of Data
Date of Survey		Seals Counted		No.	%	No.	%	No.	%	No.	%	
1966	19 June	157 <sup>6</sup>		95	60.5	26	16.6	33	21.0	3 (36)	1.9 (22.9)	POBSP
	19 Sept	139 <sup>7</sup>		101	72.7	21	15.1	---	---	17	12.2	BSFW
	18 Oct	111		80	72.1	22 <sup>8</sup>	19.8	---	---	9	8.1	POBSP
1967	20 March	139 <sup>8a</sup>		102	74.5	8	5.8	17	12.4	10	7.3 (7.2)	BSFW
	6 June	128		87	68.0	18	14.1	11 <sup>9</sup>	8.6	12	9.4	POBSP
	2 Sept <sup>10</sup>	141		---	---	---	---	---	---	10	7.1	POBSP
	25 Sept	181		117	64.6	36	19.9	28	15.5	0	0.0	BSFW
1968	20 March	123		67	54.5	27	22.0	19	15.4	10	8.1	BSFW
	Sept	Data not available										BSFW
1969	30 March	130		91 <sup>11</sup>	72.2	---	---	17	13.5	18	14.3	BSFW
	4 June	127		93	73.2	6	4.7	2	1.6	26	20.5	BSFW

<sup>6</sup> Count made after survey party had been on island 3 days. In this count age classifications made were newborn, pup of year, immature and adult which are listed in the columns pup, yearling, subadult, and adult respectively. If total of pup of year and newborn are combined as pup then the total compares very favorably with the June pup figure given by Rice, 1960 - combined figure is in parentheses below newborn pup figure.

<sup>7</sup> Report lists total as 138 - total of subgroups adds up to 139.

<sup>8</sup> Report listed this group as immatures (= subadults and probably some of the older pups of the year).

<sup>8a</sup> Total includes 2 unaged animals - 2nd % figure for pups = 10/139.

<sup>9</sup> In the report this figure was listed as "immatures" and was meant to include both postnatal (silva) pelage pups and yearlings. Count made on last day of 4 day visit and as a result is probably low.

<sup>10</sup> Count made on third day of visit. Being so late in the year "pups" would probably be more equivalent to yearlings - difference between this and succeeding count is a good indication of the value of making the counts on the first day.

<sup>11</sup> Included in total are four of unknown age. In report it says that 91 adults, 17 juveniles, 18 pups, and 4 unknown. It also says that there were 18 pups newly banded but tagging records list 1 1-2 year male (=SA) 11 pups and 3 yearlings. "Juvenile" figure is entered in yearly column.



Table \_\_\_\_ Seasonal variation in observed sex-ratios in different age-groups of Hawaiian Monk Seals on Lisianski

Season	ADULTS				SUB-ADULTS / YEARLINGS				PUPS			
	No. of $\sigma\sigma$ 1*	% of $\sigma\sigma$	No. of $\text{♀♀}$	% of $\text{♀♀}$	No. of $\sigma\sigma$	% of $\sigma\sigma$	No. of $\text{♀♀}$	% of $\text{♀♀}$	No. of $\sigma\sigma$	% of $\sigma\sigma$	No. of $\text{♀♀}$	% of $\text{♀♀}$
Spring (Mar.)-May)	4/188 <del>3/96</del>	52.8 <del>45.9</del>	4/168 <del>3/113</del>	47.2 <del>54.1</del>	4/69 <del>3/39</del>	53.1 <del>59.1</del>	4/61 <del>3/27</del>	46.9 <del>40.9</del>	3/19 <del>3/19</del>	50.0 <del>50.0</del>	3/19 <del>3/19</del>	50.0 <del>50.0</del>
Summer (June)-Aug.)	2/74	50.7	2/72	49.3	2/22	53.7	2/19	46.3	3/18 <del>3/18</del>	38.5 <del>40.9</del>	2/26 <del>2/26</del>	61.5 <del>59.1</del>
Autumn (Sept.-Nov.)	4/189 <del>3/156</del>	67.3 <del>70.3</del>	4/92 <del>3/66</del>	32.7 <del>29.7</del>	4/36 <del>3/28</del>	45.6 <del>46.7</del>	4/43 <del>3/32</del>	34.4 <del>53.4</del>	2/13	54.2	2/11	45.8
Winter (Dec.-Feb.)	1/128	66.7	1/4	33.3	No data available				1/0	100.0	1/0	0.0

\* The figure to the left of the virgule is the number of counts made in each season, the one to the right is the total number observed in each season.

2. All data from March  
3. " " " June  
4. Data from Sept. and Oct.

5. Data from Feb.

in which sex ratios were recorded for the age class and how

Table \_\_\_\_ Seasonal variation in observed sex-ratios in different age-groups of Hawaiian Monk Seals on Laysan



Reverse Dates  
as usual

Given to Jane  
17 Mar 70  
for typ

TABLE Sex ratios observed in different age-groups of Hawaiian Monk Seals on Laysan Island

Date of survey	ADULTS					SUB-ADULTS / YEARLINGS					PUPS				
	No. sexed	# of ♂♂	% ♂♂	# of ♀♀	% ♀♀	No. sexed	# of ♂♂	% ♂♂	# of ♀♀	% ♀♀	No. sexed	# of ♂♂	% ♂♂	# of ♀♀	% ♀♀
<del>May 13 1961</del>															
Mar. 9 1961	31	11	35.5	20	64.5	14	7	50.0	7	50.0	--	--	--	--	--
Mar. 12 1964	84	31	36.9	53	63.1	32	22	68.8	10	31.3	--	--	--	--	--
Sept. 18 1964	63	43	68.3	20	31.7	26	11	42.3	15	57.9	--	--	--	--	--
June 19 1966	67	37	55.2	30	44.8	16	10	62.5	6	37.5	33	14	42.4	19	57.6
Sept 19 1966	90	63	70.0	27	30.0	16	8	50.0	8	50.0	15	8	53.3	7	46.7
Oct. 18 1966	69	50	72.5	19	27.5	18	9	50.0	9	50.0	9	5	55.6	4	44.4
Mar. 20 1967 <sup>3,2</sup>	94	54	57.4	40	42.6	28 <sup>3</sup>	10	50.0	18	50.0	10	5	50.0	5	50.0
June 6 1967 <sup>3</sup>	79	37	46.8	42	43.2	25	12	48.0	13	52.0	11	4	36.4	7	63.6
25 Sept 1967 <sup>3</sup>	59	33	55.9	26	44.1	19	8	42.1	11	57.9	--	--	--	--	--
1968 20 March	66	45	68.2	21	31.8	46	24	52.1	22	47.9	10	6	60.0	4	40.0
1969 30 March	81	47	58.0	34	42.0	15	6	40.0	9	60.0	18	8	44.4	10	55.6
1969 4 June <sup>4</sup>	?	?	?	?	?	?	?	?	?	?	21	7	33.3	14	66.7
Mar. 30 1969	81	47		34		15	6		9		18	8		10	
14 Feb. 1963 <sup>1,1</sup>	12	8	66.7	4	33.3	20	16	80.0	4	20.0	1	1	100.0	0	0.0
Overall ratios	795	459	57.7	336	42.3	270	143	53.0	127	47.0	128	58	45.3	70	54.7

1. Breakdown includes 7 animals assessed as yearlings males and 8 as young females. Table includes Category

1 & 2. Figures given in this line are sex ratios of animals tagged

4 & 2. Figures given are from tagging data in BSW report. Sex ratios for old seals older than pups may be available but were not given in report received by the PABSP

2 & 2. Figures for pups + yearlings (subsumed in subadult/young class) are maxima from a combination of count + tagging data

3 & 2. Figures are maxima from a combination of count + tagging data



Table . Seasonal variation in observed sex-ratios in different age-groups of Hawaiian Monk Seals on Laysan Island

Season	ADULTS				SUB-ADULTS/YEARLINGS				PUPS			
	No. of ♂♂*	% of ♂♂	No. of ♀♀	% of ♀♀	No. of ♂♂	% of ♂♂	No. of ♀♀	% of ♀♀	No. of ♂♂	% of ♂♂	No. of ♀♀	% of ♀♀
Spring (Mar.)	6/191	43.3	6/250	56.7	6/137	45.8	6/162	54.2	4/41	52.6	4/37	47.7
Summer (June, Aug.)	3/48	42.4	3/65	57.6	3/21	45.7	3/25	54.3	4/72	72.7	4/27	27.3
Autumn (Sept.-Oct.)	4/145	62.5	4/87	37.5	4/57	56.4	4/44	43.6	2/17	50.0	2/17	50.0
Winter (Dec., Feb.)	2/28	50.9	2/27	49.1	2/10	35.7	2/14	64.3	1/1	100.0	1/0	0.0

\* The figure to the left of the virgule is the number of counts made in each season in which sex ratios were recorded for the age-class and for which data is available; the one to the right is the total number observed in each season.



Table . Seasonal variation in observed sex-ratios in different age-groups of Hawaiian Monk Seals on Lisianski

Season	ADULTS				SUB-ADULTS/YEARLINGS				PUPS			
	No. of ♂♂ *	% of ♂♂	No. of ♀♀	% of ♀♀	No. of ♂♂	% of ♂♂	No. of ♀♀	% of ♀♀	No. of ♂♂	% of ♂♂	No. of ♀♀	% of ♀♀
Spring (Mar.)	4/188	52.8	4/168	47.2	4/69	53.1	4/61	46.9	3/19	50.0	3/19	50.0
Summer (June)	2/74	50.7	2/72	49.3	2/22	53.7	2/19	46.3	3/25	38.5	3/40	61.5
Autumn (Sept.-Oct.)	4/189	67.3	4/92	32.7	4/36	45.6	4/43	54.4	2/13	54.2	2/11	45.8
Winter (Feb.)	1/8	66.7	1/4	33.3	1/16	80.0	1/4	20.0	1/0	100.0	1/0	0.0

\*

The figure to the left of the virgule is the number of counts made in each season in which sex ratios were recorded for the age class; the one to the right is the total number observed in each season.



Hawaiian Monk Seal (Monachus schauinslandi)

Current Status: Resident.

Prior Records: Captain John Paty reported that the "islets . . . seemed to abound with . . . seals" when he visited Pearl and Hermes in May 1857 (Paty, op. cit.). Two years later Captain N. C. Brooks of the Hawaiian bark Gambia visited the atoll, but did not mention seals in his report (Brooks, op. cit.). A discrepancy occurs between several of his reports, as published in Honolulu in August 1859 in the Friend, the Polynesian, and the Pacific Commercial Advertiser, and also in the Nautical Magazine published in London in 1860. The Polynesian (August, 1859) reports that Brooks returned to Honolulu having "on board 240 bbls. seal oil, 1,500 skins", and the Friend (August, 1859) reports the arrival of the bark Gambia, "out 4 mos., 250 bbl. seal oil", but in the other two publications there is no mention of seals in Brooks' description of the islands, though he mentions birds and turtles.

On the 24 December 1912 Walter F. Frear, Governor of the Territory of Hawaii, went ashore at one of the sandspits and counted 35 seals, including one newborn pup (Bailey, 1952). Specimens were collected. In March 1913 Willett (Bailey, 1956) found 50 seals, about 15 females with pups, a few males and several half grown animals, on the northern island. Elschner (op. cit.) found many "sea lions" on the "northeast island" in September 1914. In April 1923 Wetmore (op. cit.) reported: "About 125 seals have been seen on the three islands explored here and undoubtedly more inhabit the islands in the northern part of the reef." He visited Southeast, Grass, and Seal islands. Galtsoff (op. cit.) counted about 68 animals in the lagoon during his stay in 1930. Brock (Bailey, 1952) estimated 180 seals to be present at Pearl and Hermes in the summer of 1951. Kenyon and Rice (1959), who made aerial surveys of the atoll in late 1956 and early 1957,



estimated 257 adults and subadults and 33 pups to be present by the latter date. Twelve adults were found by Woodside and Kramer (op. cit.) on Southeast Island in March 1961.

Population: POBSP personnel counted 201 individuals and tagged 94 at Pearl and Hermes in late February and early March 1963, but no pups were found. No counts were made in June 1963. In March 1964, 121 adults, including 14 tagged animals, were counted. The following August 125 seals, including two pups found on North Island, and 15 tagged individuals were reported. There were two separate counts in March 1965, the first from 17 through 19 March, included all the islands, and the second, on 21 and 22 March, did not include North and Humphrey islands. The earlier group found 175 animals, including two pups and six tagged individuals. The later group found 124 animals, including one pup and four tagged individuals.

Reproduction: Pups have been reported in December (Bailey, 1952), and found in March and August by POBSP personnel. On Kure Atoll, 157 miles to the northwest, the pupping season extends from mid February to early June. The gestation period is not known for this species, and copulation has never been observed.